

# Air Conditioning & Refrigeration News

The Newspaper of the Industry

VOL. 28, NO. 8, SERIAL NO. 553  
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Business News Pub. Co.

## Knowlson Chief S-W Executive; Profit Is Shown

**\$55,948 Third-Quarter Profit Reported By Stewart-Warner**

CHICAGO—James S. Knowlson, chairman of the board of Stewart-Warner Corp., has been elected president of the company to succeed Joseph E. Otis, Jr., who resigned to become president of the Dodge Mfg. Corp. of Mishawaka, Ind., effective Nov. 1.

In view of the fact that Mr. Knowlson already had been vested with all the powers and duties of the president, the board of directors decided that the corporation could best be served at the present time by combining the two offices in the same individual.

Frank Ross, a vice president of the corporation, was elected a director to fill the vacancy created by the resignation of Mr. Otis. Mr. Ross also was designated as senior vice president by the board. He has been with the company since 1905, when he started with Warner Instrument Co. When the present Stewart-Warner Corp. was formed in 1912 he was placed in charge of manufacturing for the consolidated corporation, and has since continued in that position.

For the third quarter of 1939, Stewart-Warner reported a profit of \$55,948, subject to annual audit and year-end adjustments, after provision for federal income tax and provision for adverse exchange differential applicable to the Canadian subsidiary. This compares with a net loss of \$145,579 for the same period of last year.

For the nine months ended Sept. 30, net profit amounted to \$256,209, equivalent to 21 cents per share of stock outstanding, as against a net loss of \$538,889 for the same period of last year, equal to 43 cents per share.

Current assets totaled \$10,044,917 at Sept. 30, with current liabilities of \$2,324,225, equivalent to a ratio of 4.32 to 1, as compared with last year, when current assets totaled \$10,822,937 with liabilities of \$3,479,931, a ratio of 3.11 to 1.

The company reports that business is currently at the best levels of the year.

## Is Simple Charge Account Sale the Same As Cash?

NEW YORK CITY—Are charge account sales the same as cash sales, or aren't they? Some sort of definite answer to this question may be forthcoming if the quarrel between Abraham & Straus and Bloomingdale's, large New York department stores, and the General Electric Co. over the merchandising of G-E radio phonograph combinations is brought to court, as now seems likely.

Attorneys for the firms in question, it became known last week, have had a number of meetings to consider the problem of instituting a test case.

The entire disagreement centers around diverse interpretations of the New York State fair trade law, which provides for the fixing of prices on certain articles of merchandise.

Under this law, price of the G-E radio-phonograph model in question has been fixed at \$23 for cash and \$24.50 on a time-payment basis. General Electric Co. claims that the two stores involved violated this law when they sold the sets to charge customers at the cash price. The retailers maintain that a charge account has long been considered synonymous with cash.

## In Active Command



JAMES S. KNOWLSON

## Study Shows Cooling Keeps Occupancy Up In Office Buildings

NEW ORLEANS—Occupancy of four office buildings in this city rose from 72.4% to 87% after air conditioning was installed, according to a report issued recently by a group of realtors in cooperation with Carrier Corp.

The air-conditioning study was made by Carrier and the real estate men over a 10-year period in an effort to obtain reliable figures on tenant occupancy and tenant acceptance of air conditioning. The four buildings selected were the American, Whitney, Canal Bank, and Hibernia.

The study showed that these buildings reached in the period from 1933 to 1938 an average percentage of occupancy higher than the previous all-time high of 86.9% in 1929 when business was booming. Just prior to the installations occupancy had dropped to a low average of 72.4%.

The two buildings air conditioned over the longest period, the Whitney and American, have reached a percentage of occupancy of 99.9% and 98.4% respectively. These figures are of Jan. 1, 1939. The two buildings air conditioned most recently (1938) have both shown decided improvements in their occupancy percentage ratios.

During the period from 1929 through 1938, non-air-conditioned buildings in New Orleans dropped from an average percentage of occupancy of 91.2% to 67.2%.

## Fall Sales Gain Spurs Cole's Xmas Budget

NEW YORK CITY—Encouraged by the quickened sales pace of refrigerators and other major appliances, Rex Cole, Inc., General Electric distributor here, plans to conduct the most extensive Christmas newspaper advertising campaign in its promotion-studded history, according to an announcement by Mr. Cole himself.

Mr. Cole reported that September refrigerator sales showed three times as much of a gain over September, 1938, as August sales this year did over sales for the same month last year. All indications point to an even more rapid sales rise in the near future, he said.

A comprehensive tie-in program for Cole dealers is scheduled to include mats for local newspaper advertising, 24-sheet posters, painted boards, car cards, and suggestions for radio programs.

Refrigerators will receive the major emphasis in this holiday drive, Mr. Cole declared, but other appliances, such as ranges, washers, ironers, and complete kitchen ensembles, will not be neglected.

## Machine Produces 'Frozen Sleep' with Circulating Water

BUFFALO—Newly patented refrigeration machines which are expected to revolutionize the treatment of cancer by inducing "frozen sleep," have been installed in the Deaconess Hospital and the Buffalo General Hospital here.

The machines, called "Therm-O-Rite" units, were invented by Eugene L. Barnes, a refrigeration engineer of this city. There are four in existence at present in the United States.

The one at the Deaconess Hospital is at present being used to treat a 55-year-old Eggertsville woman suffering from adenocarcinoma. She is the first patient to be submitted to the new revolutionary treatment here.

While no claim is made that the machines can cure cancer patients, it is pointed out by medical men here that the machine does alleviate pain, and is also credited with arresting the growth of cancer tissue.

H. A. Brenner, who is associated with Mr. Barnes in production of the "hibernation equipment," said that Mr. Barnes' invention came as a result of his desire to evolve a satisfactory substitute for hot and cold water bottles and ice-packs.

He had been working on the idea since 1936. First he invented a machine that would provide for application of controlled heat, and the present machine followed, which will provide a temperature range from 23 to 140° F.

Thus a patient's temperature may either be raised to high fever heat, or reduced to a very low degree. The machine is run by a plug-in to house current.

The machine is a neat, box-like affair that looks much like a portable electric heater. Connected with it by many rubber tubes is the casing for the patient. These rubber tubes run like cords through the casing, or blanket and water circulates through them. A thermostat keeps

(Concluded on Page 10, Column 2)

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## Refrigeration vs. Cancer



Dr. John Geckler of the staff of Deaconess Hospital, Buffalo, adjusts the mechanical refrigeration system which produces the condition known as "frozen sleep," new scientific experiment in the treatment of cancer. Chilled water circulating through the rubber tubing shown produces the desired condition.

## NRDGA Launches Attack Against 36-Month Time Payment Plan

### Chapman and Snyder To Assist Andrews

BRIDGEPORT, Conn.—In line with the recent consolidation of all of General Electric's appliance operations here, George Chapman and Carl M. Snyder have been named assistant managers of the appliance and merchandise department.

Mr. Chapman, who has had 26 years of experience in G-E lamps and appliance activities, will assist H. L. Andrews, vice president and executive head of the department, in the administration of the appliance division, and Mr. Snyder will be responsible for sales and sales activities of all G-E appliances, together with radio and television receivers and tubes.

Both men will undertake their new duties immediately, and will make their headquarters in Bridgeport.

It also was announced that the identities of the G-E specialty and household appliance divisions, heretofore separated at Cleveland and Bridgeport, respectively, would be merged into a single appliance division.

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### Landmesser Heads Nema Commercial Section

NEW YORK CITY—Walter E. Landmesser, sales manager of the commercial air conditioning and refrigerating division of York Ice Machinery Corp., has been elected chairman of the Commercial Refrigeration Section of the Refrigeration Division of National Electrical Manufacturers Association.

Mr. Landmesser succeeds J. A. Harlan, sales manager of the commercial division of Kelvinator.

Written to Be Read on Arrival

ISSUED EVERY WEDNESDAY  
\$4.00 PER YEAR

♦ 'No Need Now' Is Point;  
Figures Show It Jumps  
Repossession Rate

NEW YORK CITY—Recent re-introduction of 36-month credit terms on major appliances by two leading sales finance companies has resulted in a general feeling of apprehension on the part of department and specialty store credit executives, who fear that the step may encourage an unwise liberalization of credit terms on instalment selling lines generally, reports the credit management division of National Retail Dry Goods Association.

In its newest service publication to member stores, "Credit Currents," the credit management division cites the common belief among credit executives that the only time an extension of terms is justified is during a period of declining sales or generally depressed business conditions, when such terms might be effective.

"In view of present improved business conditions, such lengthening of terms at this time is considered as unwise as it is unwarranted," J. Anton Hagios, manager of the division, pointed out.

"If anything, current credit policy should call for maximum terms of 24 to 30 months at the most, and as conditions improved this maximum might gradually even be restricted somewhat more in order to provide slack for possible future liberalization of terms, so as to equalize sales during the next period of declining business activity."

Thirty-six month terms have not been in effect since the expiration of FHA Title I terms, the N.R.D.G.A. said. During the period those terms were in force, the leading associations in the consumer credit field joined in expressing the view that the FHA terms were excessive, a belief which has since been substantiated, it was declared.

These organizations included the National Association of Sales Finance Companies, the National Retail Furniture Association, the National Retail Credit Association, and the N.R.D.G.A.

"The disastrous effect of lengthening terms unduly was clearly borne out by the repossession experience of a nationally known instalment operator," the credit management division asserted. "This company aver-

(Concluded on Page 12, Column 5)

### Chicago Mart Appliance Sales Up 40% In Sept.

CHICAGO—Sales of \$1,441,626.81 in the major and electrical appliance field were reported by wholesalers in the Merchandise Mart during September, a gain of 40.4% over the \$1,027,223.10 reported for the same month last year, and 17.8% higher than the August total of \$1,183,957.65, reports the mart's monthly Barometer of Wholesale Buying.

Average sales gain over 1938 of 40.3% in 20 major classifications was reported by the survey, with aggregate sales at wholesale in the Merchandise Mart in 3,743 lines of products totaling \$14,259,531.82, as compared with \$10,164,007.53 in the same lines during September, 1938.

(Concluded on Page 12, Column 2)

### Refrigerator Taxes Total \$637,533 In September

WASHINGTON, D. C.—Excise tax collections on mechanical refrigerators amounted to \$637,537 during September, as compared with \$404,479 in the same month of 1938, according to reports compiled by the Bureau of Internal Revenue.

## Profitable Sales Ideas

### Small Appliances—a BIG Field

#### Going After More \$5 'Traffic Item' Sales Seen As Double-Profit Way To Big-Appliance Business

NEW YORK CITY—A major interest of the electrical industry must be to get more \$5 transactions in traffic appliances to compete with the \$5 non-electrical household purchase, H. B. Donley, manager of the appliance department of Westinghouse, told representatives of the International Association of Electrical Leagues at their recent meeting here.

"In spite of our efforts and not because of them, traffic appliances produce an annual dollar volume amounting to one third that of electric refrigerators, equal that of electric washers, twice that of electric ranges, and six times that of ironers and water heaters," Mr. Donley stated. He explained that he used the word "traffic" instead of "small" to designate this type of appliance, because they have "universal appeal, attract attention and bring people into the store, and can be bought out of pocket and purse." "As a business they are no longer small," he continued. "Retail volume during the last 12 months totaled some \$70,000,000."

#### GREW UP UNAIDED

"What has accounted for this impressive growth in sales?" asked Mr. Donley. "We cannot say that as an industry we have thrown powerful merchandising forces behind them. The net of it is, traffic appliances have attained maturity in this industry without more than a fraction of the promotional effort we have put behind refrigerators, ranges, and other major appliances.

"The only conclusion we can draw is that these appliances of low unit price—average \$5—are selling because people want them, find them useful and convenient, and because quite a number of these people have actually been able to find a store displaying and selling them.

"The public is the buyer and user of all electrical appliances, including traffic appliances. How does the public benefit in the increased purchases and use of traffic appliances? They get better toast for breakfast, with no burned slices of bread. A gain—an avoided loss. They get better coffee, either with or without egg. They enjoy added hours of freedom. That these benefits are worth more than money is proved by that repeated fact—14 million \$5 bills changed hands for such benefits during the last 12 months.

The retailer who sells these appliances—how does he gain? Well, he

makes a profit on their sale. But he could sell twice as many without material increase in inventory and make more than twice as much on his investment. He could do it without material increase in cost of doing business and thus increase his margin of net profit.

"But even more important to these dealers handling major appliances, he can create new users of traffic appliances, and new prospects for major appliances at the same time. It's like eating your cake and having it, too.

"Instead of costing money to get major appliance prospects, the dealers get their prospects and make money while getting them. He can attract thousands who are interested in these varied low-priced products, as against hundreds who are interested in and able to buy major appliances.

"The jobber gains as does the dealer," continued Mr. Donley. "He gains in larger volume, faster turnover, and the cultivation of new users of electrical appliances. He gains, too, in the broader distribution of these traffic appliances—new customers and a broader base for his business.

"Utilities have told me that traffic appliance load is usually off-peak load and hence very desirable. They also tell me that generally it is load sold in the first step of the rate bracket. It certainly is valuable load in its effect on low-use customers.

#### GETTING MORE \$5 BILLS

"A major interest of the electrical industry must be to get more \$5 transactions. There is a simple way of doing this.

"First: Display traffic appliances continuously.

"Second: Sell uses and benefits of traffic appliances continuously.

"Remember that traffic appliances represent \$5 transactions, and sell them that way. They will respond to the same kind of treatment that sells hats, dresses, and silk stockings, with which they are in competition for the homemaker's dollar.

"Display comes first," Mr. Donley stated. "No matter what else is done to create want and desire, merchandise is not bought until it is seen. The more exposure the more sales is just as true of irons, sandwich grills, toasters, and coffee makers as it is of stockings, candy, pocketbooks, and neckties.

"How can windows be made to attract more people . . . sell more

### 'Bargain Bait' For Bigger Business

While most dealers have been busy pushing major-appliance sales, the small-appliance field, like Topsy, has "just growed up" almost unaided into a full-sized member of the family—as last year's \$70,000,000 retail volume indicates.

Here are suggestions as to how big-appliance dealers can get their share of these \$5 "traffic item" transactions, and use them to double profit as crowd-pullers for refrigerator and range prospects.

merchandise? I suggest traffic appliances as the answer, because . . . an attractive display of electric irons in the washer window will quadruple the effectiveness of this window. Why? Sales figures prove there are four times as many electric irons purchased as there are washers and ironers . . . four times as many people will, therefore, be interested in irons and a window showing them. "Let's go to the refrigerator window. A well chosen assortment of table appliances in that window will multiply its 'stop power' by five. Proof is again found in the sales figures so by using the traffic appliances in these windows, 95 people out of a thousand can be attracted to them instead of 21. Certainly, on this basis, the windows are better paying their way, and a big plus will come in the increased sale of the traffic items by that retailer who lets the public know he sells them.

"The high traffic points within the store are where the traffic appliances should be. They should be out in the open where they can be seen, handled, and used demonstrated. Can the retailer afford to give traffic appliances this space? He can't afford not to—again because of the increased interest power of traffic appliances, and because three or four square feet of floor space devoted to a traffic appliance display at the high traffic points inside the store will go a long way toward paying his total store overhead.

"The want must come before the sale. When people want waffles they will buy a waffle iron with which to make them, and not before.

There can be no slackening of our efforts in selling the uses and benefits of traffic appliances, if we are to enjoy a continuing healthy and profitable volume of sales.

"The use and benefit story must be told in advertising, and followed through in displays at the point of purchase and in the sales story told by the retail sales person. Wherever possible, these uses and benefits should be demonstrated.

"During the last year we have all heard a great deal about the electric roaster," said Mr. Donley. "Puzzling to some is the fact that electric roasters seem to sell well in some areas, and not so well in others. No doubt many of you have asked why. There can only be one reason.

"The places where roasters are selling well are those places where the uses and benefits of owning an electric roaster have been sold. It doesn't make any difference what price you put on the roaster, what deal you offer to the public, or how much pressure you put behind roasters in a roaster campaign—you won't sell enough to wad a shotgun unless you first sell the uses and benefits of electric roaster cooking.

"Electrical leagues must assume a position of leadership in the timing and coordination of all of these efforts. Spasmodic and scattered effort isn't up to the job we can do. But concerted, consistent, organized effort will make gains all along the front. Traffic appliances sell throughout the year. They are the staples of our electrical merchandise, and they should be promoted as staples—the year around."

### Hotpoint Maps 'Double-Action' Refrigerator Drive To Build Up Fall and Winter Sales

CHICAGO—Hotpoint has planned a "double-action" refrigerator campaign for the fall and winter selling season. The first "action" is to make the dealer sell; the second is to make the dealer buy. Sales appeal to cold weather refrigerator buyers is built around the idea that "it's always summer in your kitchen," plus a savings story on winter food bills that is designed to build dealer sales during the final months of the selling season.

Plan for the double-action campaign centers around a promotion package, consisting of a special window display, folders, yardsticks to be given away free to refrigerator

prospects, window streamers, and 1,000 newspaper broadsides. A special campaign price is being offered to dealers.

The newspaper broadside brings the basic story of the campaign to prospects. It is a four-page, two-color piece, which discusses the problems of fall and winter food preservation from the housewife's angle. It points out that the larger food supply in winter needs to be protected by electric refrigeration. Also emphasized is the advantage of trading in a refrigerator in the cool months, making payments a year-around proposition.

Effectiveness of the broadside is increased by a coupon appeal, offering a free yardstick. The coupon gives the dealer a direct line on prospects; the free yardstick carries the Hotpoint story into the home.

### Vacationing Manager

#### Paced By Sales

ATLANTA—When William Retzbach, manager of Georgia Power Co.'s Peachtree store, went a-flying on his vacation, his salesmen decided to take a little sales flyer of their own, and launched a "Keep-Ahead-of-Retzbach Campaign."

All principal points that Mr. Retzbach and his family were to touch on their airline trip—New Orleans, Phoenix, Ariz., Los Angeles, Seattle, Cheyenne, Wyo., Chicago, etc.—were charted on a map. Each jump to one of these points was made to represent \$500 of the \$7,000 quota which the men had set as their goal.

And the salesmen actually succeeded in their endeavor to stay ahead of their boss, for total sales during the two-week drive amounted to \$7,289.

Winning team was led by John Merkling and sponsored by Fay Pearce. As a result of its victory in the campaign, this team won a dinner at the expense of the losing side, captained by H. F. Mangat and sponsored by O. C. Hubert.

### Classes For Negro Home Agents Begin In South

JACKSON, Miss.—The South's first school on the use of electrical appliances for Negro home demonstration agents was conducted here recently by Miss Fannie May Izard, director of the home service department of Mississippi Power & Light Co., assisted by Miss Maude Smith, specialist from the state extension department. This school, which was attended by agents from 29 counties, is expected to stimulate appliance demand among Negro families.

### Rolls Royce Only a Part Of This Trade-In Deal

DELAND, Fla.—The automobile has definitely replaced the horse, and "hoss traders" have gone the way of old Dobbin, according to "Motor-Trader" Gerald Frierson, Westinghouse dealer here, who recently acquired a genuine Rolls Royce in a trade for an electric refrigerator.

Mr. Frierson is a firm believer in the barter system in swinging his appliance deals. The former owner of the Rolls Royce was in the market for an electric refrigerator, and he wanted to trade.

He offered an old mechanical refrigerator and a wood-burning parlor stove without a nibble. He then led Mr. Frierson out to the garage and unveiled a seven passenger Rolls Royce limousine, for which he had paid \$16,500 in its youth. Mr. Frierson agreed on the swap, but only after his prospect added \$79 in cash to the "bullion buggy," the refrigerator, and the stove.

This trading dealer is hoping for a good year in '40 so he can get a footman and chauffeur to go with the Rolls.

### PEERLESS

#### Gun Cooler (UPSIDE DOWN COOLING)

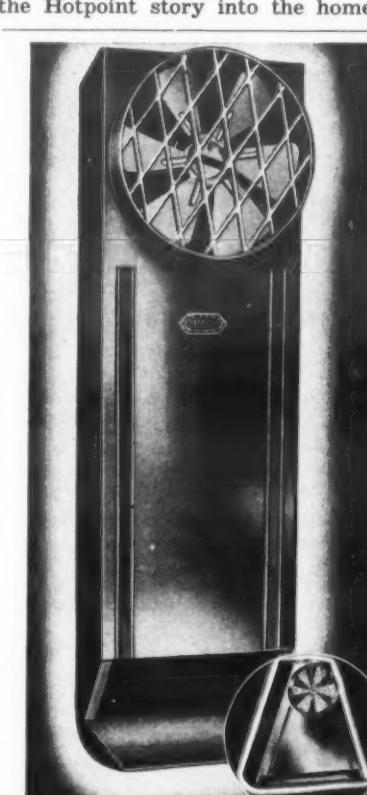
COLD AIR cascades from the BOTTOM of the PEERLESS GUN COOLER. WARM AIR is drawn from the top of the fixture. COOLED AIR ascends VERTICALLY through the Products Stored. Uniform temperatures ALL OVER the Fixture. HIGH HUMIDITY—NO FOOD Shrinkage. And its PACKAGED Refrigeration . . . made for every type of fixture . . . ready and easy to install . . . Capacities 1200 to 12000 B.T.U. per hour.

TRY THIS NEW METHOD ON YOUR NEXT JOB!

### PEERLESS OF AMERICA, INC.

General Offices—515 W. 35th St., Chicago, Illinois  
Midwest Factory—515 W. 35th St., Chicago, Illinois  
New York Factory—43-20 34th St., Long Island City  
Pacific Coast Factory—3000 S. Main, Los Angeles  
Southwest Factory—2218 N. Harwood St., Dallas  
Export Division—P. O. Box 634, Detroit, Mich., U.S.A.

See Our Display at Booths 123, 124, 125 Second All Industry Exhibition, January 15-18, Hotel Stevens, Chicago



### The Completeness of the CURTIS Line Assures the Correct Equipment for Every Air Conditioning or Refrigeration Need

WHETHER you buy, sell, install or specify air conditioning or refrigeration equipment, there's a Curtis unit that fulfills every requirement. Curtis covers a wide range of markets—makes possible greater sales. And you can specify Curtis products with absolute confidence.

The Curtis Store and Office Cooler fulfills the air conditioning demands of all classes of retail establishments. It's a complete, factory designed, packaged air conditioning unit. It mechanically cools, dehumidifies, circulates and filters the air—is quickly and easily installed with only water and electrical connections needed—adaptable for heating, too. It is offered in 3 and 5 ton sizes.

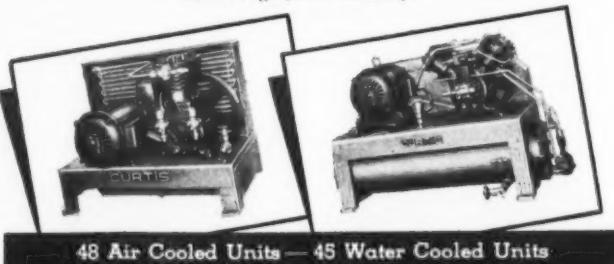
The Curtis Line of Condensing Units includes sizes from 1/6 H.P. to 30 tons air and water cooled—also unit coolers, coils, evaporative condensers, etc. Every Curtis product is precision engineered to deliver economical, efficient, care-free performance throughout an exceptionally long life.

**Curtis Refrigerating Machine Company**  
Division of Curtis Manufacturing Co.

1912 Kienlen Avenue, St. Louis, Mo.

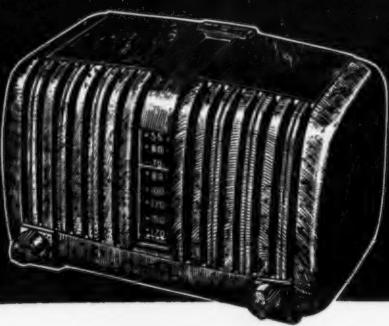


Installation of Two Curtis Store and Office Coolers in the Sonnie Buffet, New York City.



Builders of Condensing Units Since 1926

**CURTIS**  
REFRIGERATION  
AIR CONDITIONING  
INDUSTRIAL



**CROSLEY 599A**  
Operates AC-DC current. No ground. Carry it anywhere. Etched dial. Unusually clear tone. Brown bakelite case \$7.99. Colored cabinets slightly higher. Other table models \$9.99 to \$29.95.



**7 TUBE SUPERHET 719A**  
Illuminated slide rule type dial, new improved push buttons, unmatched at \$19.95. Foreign wave band added at slightly higher price. Other deluxe table models \$24.95 and \$29.95.



**12-lb. PORTABLE B-549A**  
Operated with AC-DC current or batteries. Automatic switch changes over. Light weight, carry it anywhere. \$24.95 with batteries good for 200 hours or better.



**CONSOLE 7739M**  
7 tube Superhet with NEW CURVE-FLECTOR tone diffuser and improved push button tuning. Domestic broadcast and short-wave for foreign reception. Cabinet imparts rich quality from finely selected woods. A real value at \$49.95. Other consoles also outstanding values at \$39.95.

## MEET THE DEMAND

Crosley presents smart developments of built-in aerials—television outlets—simplified push button tuning—features that the public is promised this season!

## OFFER MORE INNOVATIONS

with exclusive Crosley Curveflector Tone Diffuser in consoles . . . advanced Crosley automatic switch from batteries to AC-DC current in portable radio . . . Capehart record changer in combination 639M.

## GIVE MOST FOR THE MONEY

Every practical radio improvement plus many clever Crosley developments — some solely Crosley — some great advancements on existing features — all backed by 18 years of radio experience and discovery. This is pioneer radio — still out in front with all the advantages that accrue to those who MAKE history.



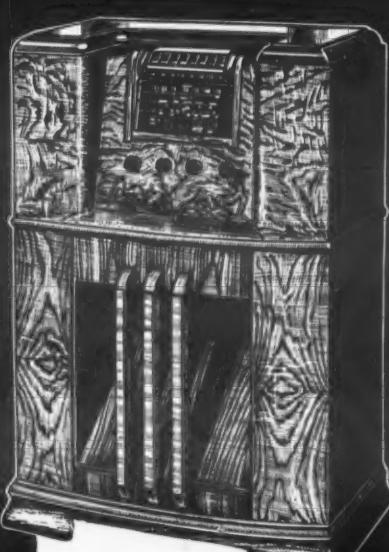
Prices slightly higher  
in South and West.

**CROSLEY**  
**THE CROSLEY CORPORATION**

POWEL CROSLEY, Jr., President

Home of "the Nation's Station"—WLW—70 on your dial

CINCINNATI



**CONSOLE 819M**  
Massive cabinet, 8 tubes, heavy duty speaker assembled on NEW tone diffusion baffle — the exclusive Crosley CURVE-FLECTOR. Far and away the biggest radio package on the market at the price. Biggest selling single radio item in Crosley's 18 years. \$69.95.



**COMBINATION PHONOGRAPH AND RADIO 639M**  
Latest type crystal pickup, heavy motor, efficient radio and fine electro dynamic speaker create quality instrument, high fidelity assured. Capehart record changer, new Curveflector tone diffuser. MODEL SHOWN \$114. Other combinations at \$69.95 and \$49.95.

## Commercial Refrigeration

### Use of Refrigeration By the Baker

#### 2. Refrigeration Requirements For the Mixer, Make-Up Work, and In Bread Cooling

By William H. Cathcart, Research Dept.,  
American Institute of Baking, Chicago

**Editor's Note:** Refrigeration has found increased use in the baking industry, and the application is one that requires specific knowledge of the subject on the part of the refrigeration installer. This is the second in a series of articles by an authority on bakery practices that provides information on cooling needs in bakery operation.

#### Refrigeration For the Mixer

Even under the best storage conditions for ingredients there are seasons of the year when some form of refrigeration, other than that mentioned above, is necessary during mixing. If the temperatures of the ingredients, especially the flour and water, are higher than the optimum temperatures mentioned, a large amount of refrigeration will be needed during mixing, for the temperature of the bread or sweet goods dough is generally desired at 78-80° F. when mixed.

At the mixer electrical energy is converted into mechanical energy and then into heat energy. The conversion of mechanical energy into heat energy in the mixer is due to friction and it has been estimated about 85 to 90% of the electrical input to the motor is converted into heat

which warms the dough during mixing.

Knowing the total quantity of electrical energy (in kilowatts) used during the total mixing time it is possible to calculate the number of B.t.u. developed in the mixer, or it is possible to calculate the number of horsepower required to mix the dough. Averages of many different doughs show that it requires about 4 hp. per minute for every hundred pounds of flour in the dough.<sup>3</sup>

This is for the straight dough method.<sup>4</sup> P. G. Pirrie<sup>5</sup> also gives the figures for the sponge and dough method<sup>6</sup> and goes into these calculations more in detail. One can use this average figure to give an approximate estimate of the number of B.t.u. developed in the mixer. For example, a straight dough containing 500 lbs. of flour and mixed for six minutes will develop 4 x 5 x 6 x 42.427—5,080 B.t.u.

Another source of heat in the mixer is the heat of hydration of the flour which is approximately 6.5 B.t.u. per pound.

In addition to the above, one must consider the following factors when determining the amount of refrigeration for the mixer:

1. Design of the dough mixer.
  2. Radiation to and from the mixer.
  3. Speed of the mixer. More refrigeration being required for the faster speeds.
  4. Consistency of the dough. More refrigeration being required for stiffer doughs.
  5. Size of the dough. More refrigeration being required for the larger doughs.
  6. Length of the mixing period. More refrigeration being required for the longer periods.
- Bakers are cooling doughs in the mixer in the following ways:
1. Cold ingredient water.
  2. Part of the ingredient water replaced with cracked ice.
  3. By circulating a refrigerant, which may be water, through jackets around the mixing bowl.
  4. By blowing cold air into the mixer while the dough is being mixed.

The general procedure is to have a sufficient supply of cold ingredient water and then when necessary obtain added cooling with ice or a water jacket.<sup>8</sup>

<sup>3</sup> This figure for average horsepower is dependent on the type of machine used, type and character of dough, etc.

<sup>4</sup> Where all ingredients are mixed at one time.

<sup>5</sup> P. G. Pirrie, Bakers Weekly, July 31 (1937).

<sup>6</sup> Part of ingredients is mixed, allowed to ferment, and then remixed with the rest of the ingredients.

<sup>7</sup> One horsepower minute is equal to 42.42 B.t.u.

<sup>8</sup> Cold air blown into the top of the mixer or through holes in the mixer arms is also used.

When it is necessary to circulate water through the mixing jacket, this can be taken from the same tank used for the cold ingredient water, provided a filter is placed in the line returning from the water jacket. This of course is to prevent any scale, etc. from getting into the ingredient water supply. It is much superior to have a separate tank for the cooling jacket water. In this case the refrigerant water for the jacket can just be recirculated and used over and over again.

Crushed ice can be used very effectively, however, it must be crushed to a point of fine division which takes time. Also there is danger of foreign material chipped from the ice-crushing boxes entering the mixer unless an ice-crushing machine is used.

It is interesting to note that cases of high speed mixers have been reported where high flour temperatures (in the summer time) have made it impossible to cool the dough sufficiently with cold ingredient water and a cooling jacket—it was necessary to also add ice. Had the flour been at the proper temperature the ice would have been unnecessary.

Mr. Pirrie<sup>9</sup> calculates that mechanical refrigeration for cooling the mixer is cheaper than using crushed ice, mechanical refrigeration costing only about two thirds that of ice. A. Wahl<sup>10</sup> has estimated that mechanical refrigeration offers a saving of about two thirds over that of ice. A. J. Cordray<sup>11</sup> states that "the relative cost of air refrigeration is comparatively high and the first cost of equipment greater than that used for water (jacket) cooling." Mr. Cordray only recommended air refrigeration for the mixer when the baker has an unjacketed mixer.

#### Fermentation Room

After the bread or sweet goods is mixed it must be fermented. The time of fermentation depends on the type of dough and varies from about 2 to 6 hours. For consistent results it is very important that the temperature and the humidity of the fermentation room be controlled. Both of these factors are very important; for instance, temperature controls the rate of fermentation, while the control of humidity prevents excessive evaporation from the dough and also prevents moisture from collecting on the dough from the atmosphere.

Generally, it is desired that the temperature be 78 to 80° F. and the relative humidity 70-75%. The humidity depends to some extent on the degree of air circulation. Correct control of the temperature and the humidity will allow fermentation periods to be standardized and the fermentation loss can be reduced. As much as 50% reduction has been reported in some cases. In an uncontrolled fermentation room a dough will lose 1.25 to 1.75% of its weight. This loss is expensive when production is large.

Air conditioning is desirable for temperature and humidity control. At times cold water sprays in the air-conditioning system will suffice for the cooling effect; however, in

(Continued on Page 5, Column 1)

<sup>9</sup> P. G. Pirrie, Bakers Weekly, Jan. 9, 31 (1937).

<sup>10</sup> A. Wahl, Bakers' Helper, April 28, 1009 (1928).

<sup>11</sup> A. J. Cordray, The American Baker, March 23, 1187 (1927).

#### Some of the Stages In the Baking Process

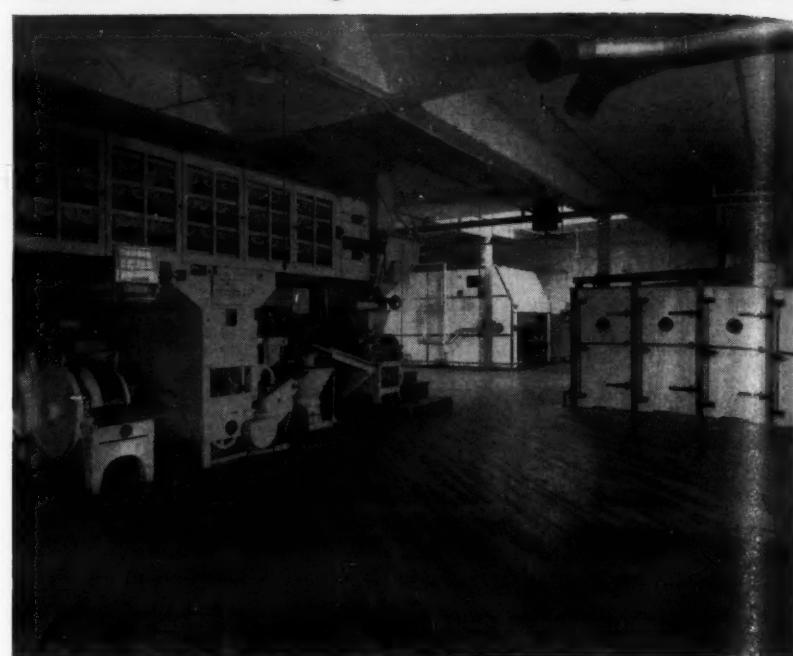


Fig. 3—Make-up department of a modern bakery. The intermediate proofer (overhead) is to be seen at the left. The divider, rounder, and moulder (reading from right to left) are to be seen underneath. The air-conditioned pan proofing "box" is at the right. The oven seen in the background is a modern traveling tray type.



Fig. 4—From the intermediate proof the dough enters a moulding machine which kneads and shapes it into loaves to fit the baking pans.



Fig. 5—View showing the inside of an air-conditioned traveling bread cooler, as used in the modern bakery.

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Smooth and silent as a sailboat, Servel's "Silver Fleet" refrigerating machines offer you a standard of operating efficiency that is 3 to 5 years ahead of the field. Ask for the new 72-page catalog. Servel, Inc., Electric Refrigeration and Air Conditioning Division, Evansville, Ind.

**COMMERCIAL REFRIGERATING MACHINES**

# Commercial Refrigeration

## The Use of Refrigeration By the Baker (Cont.)

(Continued from Page 4, Column 3)  
other cases mechanical refrigeration is necessary.

The fermentation room can be cooled by means of direct expansion coils from a mechanical refrigerating machine or by circulating cooled water through coils, generally located in the ceiling. In this arrangement a humidifier of some sort is necessary in the room.

### Make-Up

After the dough is fermented it is taken to the make-up department where it is divided (by machine in all larger plants) into the desired amount of dough for each loaf; the individual pieces are then rounded out into smooth balls. At this stage the pieces of dough are allowed to rest (ferment) in an intermediate proofer for about 10 to 20 minutes.

The temperature and humidity of this proofer (Fig. 3) should be the same as in the fermentation room and can be controlled by air-conditioning equipment. However, due to the short length of time that the dough is in this cabinet, very few bakers attempt to control conditions at this point.

When the pieces leave this proofer they are moulded, panned (Fig. 4) and then put on racks in the pan proofing "box" where they are allowed to ferment and rise to the top of the pan. They are then ready for baking.

### Pan Proof 'Box'

In the proof box the temperature should be from 94-96° F., and the humidity about 80-85%, to maintain a constant and vigorous fermentation and a moist (not wet) dough surface. Although throughout most of the year, heating instead of refrigeration is necessary, at times during summer months some type of cooling may be necessary.

Generally, cold water in coils in the air-conditioning unit or cold spray water in the system will suffice. However, a very small mechanical refrigerating unit might be necessary in some climates.

Since bread is put in the proof box in individual pans close together on racks, it is very important that the temperatures be maintained the same throughout the entire box. It should also be mentioned that the temperature of the proof box varies slightly with the type of bread being made.

### Bread Cooling

After the bread is baked it cannot be wrapped until the inside crumb has cooled to 85-90° F. When bread is cooled on open racks or conveyors on warm days, a great amount of time is necessary for it to reach the proper temperature for wrapping. Also, during cooling in the open atmosphere, bread will lose 2-4% of its weight by the evaporation of moisture.<sup>12</sup> This loss of moisture is of practical importance, since bread is sold by weight. If the bread is cooled in a room where the relative humidity is high, this loss of moisture is greatly reduced.

<sup>12</sup> I. A. Berg, Baking Technology, 5, 206 (1926).

In a tunnel-type traveling bread cooler in which the direction of the bread is against that of the incoming air (temperature 70-75° F.) the relative humidity should be 80 to 85%. The incoming air should be completely air conditioned. Under normal climatic conditions mechanical refrigeration is not needed to cool the air in the humidifying and air-washer unit for a bread cooler; sufficient lowering of the temperature being obtained by evaporation of water.

Needless to say, the cooling system should not only embody the proper control of the air for cooling, but the mechanical handling of the bread as well.

If a tunnel type cooler is not available, cooling bread on racks in an air-conditioned room under the same conditions of temperature and humidity will be helpful.<sup>13</sup> P. Beier<sup>14</sup> found that although there was little difference in time of cooling between atmospheric rack cooling (temperature 80° F.) and tunnel-type air conditioned cooling at 80° F., there was a reduction in moisture loss of 0.25 ounce per pound. The time required to cool the bread crumb to 90° F. was 80 minutes.

Other advantages of air-conditioned cooling are:

1. Prevents crust checking.
2. Reduces crumbling when bread is sliced.
3. Makes possible a uniform short cooling period throughout the year.
4. Permits standardized sealing due to uniform weight loss.
5. Reduces the mold problem.

Vacuum coolers should be mentioned as a new development in the baking industry. The bread is allowed to cool in the existing atmosphere for about 40 minutes and then placed in a vacuum of 28.6 inches, which reduces the temperature of the crumb to 85° F. in about 4 minutes. This makes a total cooling time of about 44 minutes.

The character of the crust and the amount of moisture in the bread can be adjusted by the length of time the bread is allowed to stand before entering the vacuum. For further details the reader is referred to an article by M. H. Duval.<sup>15</sup>

All of the data given here under "Bread Cooling" apply to white bread and will vary slightly for other types of bread and bakery products.

(To Be Continued)

<sup>13</sup> I. A. Berg, Baking Technology, 5, 279 (1926) and 328 (1926).

<sup>14</sup> Unpublished observations of P. Beier at American Institute of Baking.

<sup>15</sup> M. H. Duval, Bakers Weekly, Nov. 21, 43 (1936).

### All G-E Sales For First 9 Months Up 13%

SCHENECTADY, N. Y.—Sales billed by General Electric during the first nine months of 1939 amounted to \$217,900,154, compared with \$192,501,173 during the corresponding period of 1938, an increase of 13%. Profit available for dividends for the first nine months this year amounted to \$25,022,631, compared with \$17,548,256 for the first nine months last year, an increase of 43%. This profit for nine months is equivalent to 87 cents a share of common stock, compared with 61 cents a share in the same period of 1938.

## Gale Products Joins Nema Group

NEW YORK CITY—Gale Products division of Outboard, Marine & Mfg. Co. recently has become affiliated with the Commercial Refrigeration Section of the Refrigeration Division of National Electrical Manufacturers Association. L. D. H. Baker, sales manager, is executive and voting representative of the company in Nema, and C. A. Baker, assistant sales manager, is associate representative.

## 'Bevador' For Soft Drinks Introduced

BUFFALO—Development of the "Bev-a-dor," a junior companion to the radically designed "Beerador" dry beverage cooler which it introduced some time ago, has been announced by Jewett Refrigerator Co., Inc.

Very much like its predecessor, except that it is plainly cylindrical in shape instead of resembling a gigantic beer bottle, the Bev-a-dor

## New Circular Cooler



is 76 inches high and 37 inches in diameter. Compressor is located in the bottom of the unit, and is equipped with a 1/4-hp. motor.

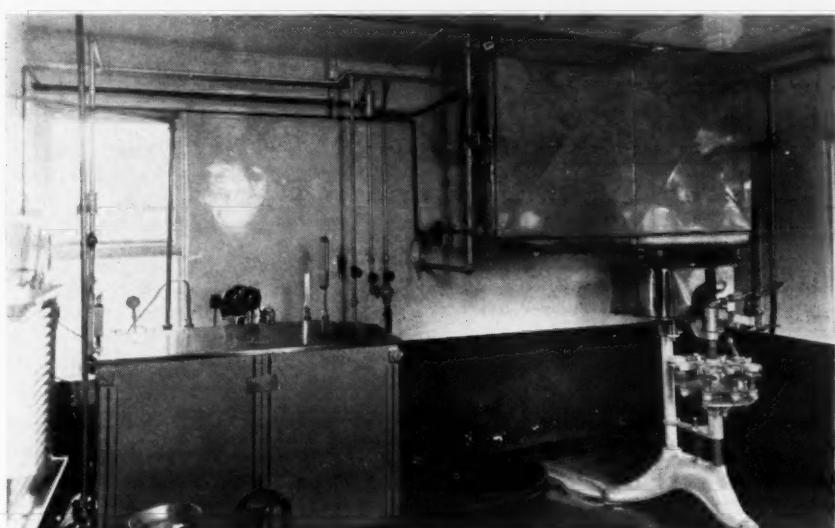
Like the Beerador, the newer unit has a capacity of 356 bottles, each of its four revolving shelves holding 84 steinie bottles, while 20 picnic size bottles may be stored on the top shelf in front of the blower-type refrigerating coil.

The Bev-a-dor is finished on the exterior and interior with silver bronze lacquer. The metal interior and exterior shells are completely sealed and contain 3 inches of insulation.

## Gloekler Opens Export Office In New York

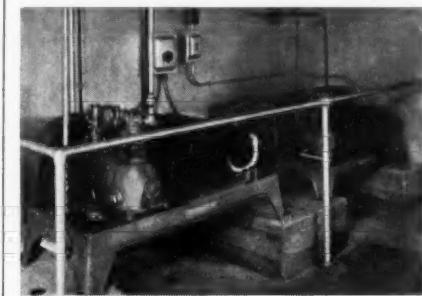
NEW YORK CITY—To expedite handling of its growing foreign trade, Gloekler Mfg. Co., Erie, Pa., manufacturer of commercial refrigeration equipment, has opened an export office at 20 Vesey St. here.

## For Milk and Cream Cooling



Small dairy installation with direct expansion aerator connected to a Mills 5-hp. compressor. Temperature is kept from dropping below 30° F. through installation of a large-orifice Temprite constant pressure valve on the suction line of the system.

## Special Tricks Used In Small Dairy System



Two Mills compressors mounted on cement piers so washing can be done easily.

air-cooled "Freon" condensing unit takes care of a built-in cooler equipped with a Peerless cooling unit cooler and an Automatic Products expansion valve.

Both compressors are mounted on cement piers so that the floors may be washed easily without interfering with the machinery.

## Lipman To Corpus Christi

CORPUS CHRISTI, Tex.—Corpus Christi Air Conditioning Co. has been appointed distributor of Lipman and General Refrigeration equipment in this territory.

## Quality SERVICE SUPPLIES

## EXTRA DRY ESOTOO ANHYDROUS LIQUID SULFUR DIOXIDE

Produced under rigid laboratory control to insure unusual purity, dryness, dependability. Available in 5, 10, 35, 70, 100, and 150 lb. cylinders, and in multi-unit tank cars.

## V-METH-L

### METHYL CHLORIDE

High purity, extremely low acidity, meeting highest specifications of manufacturers of equipment designed for it. Shipped in 3½, 6, 20, 40, 60, 90, 130 lb. cylinders, and in multi-unit tank cars.

## METHYLENE CHLORIDE

Refrigeration grade, used in centrifugal compressor systems. Supplied in 1 and 5 gal. cans and in 300 and 550 lb. drums.

## DRIERITE

Solid drying agent. Highly efficient, absolutely neutral, easily renewable. Use Drierite for removing moisture safely, effectively, and economically from all refrigerating systems. Packed in 1 lb. screw-capped metal cans.

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# KRAMER TRENTON COMPANY

TRENTON, NEW JERSEY

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Published Every Wednesday by BUSINESS NEWS PUBLISHING CO. 5229 Cass Ave., Detroit, Mich. Telephone Columbia 4242

Subscription Rates  
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: \$4.00 per year; 2 years for \$7.00. All other foreign countries: \$6.00 per year. Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order.

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VOL. 28, NO. 8, SERIAL NO. 553  
OCTOBER 25, 1939  
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## Wholesalers vs. Distributors In 1940

CINCINNATI last week played host to the National Electrical Wholesalers Association. For the most part, this group consists of old-line jobbers of electrical supplies. However, they have entered more and more into the appliance picture as distributing agents in recent years.

Bankruptcy of numerous specialty distributors in the last several years has forced these jobbing houses into taking on appliance lines and making them move. Especially has this been true of "chain" jobbing houses like Graybar, General Electric Supply Corp., and Westinghouse Electric Supply Co.

### Wholesalers Believe They Will Supplant Distributors

Indication of the importance which the specialty appliance business has attained with these old-line jobbers may be found in the committee meetings, which were divided into the following groups:

refrigeration; washers, ironers, and vacuum cleaners; ranges and water heaters; radio and tubes; ventilating and air conditioning; residential lighting fixtures; outside construction materials; small socket appliances; wires and cable; and wiring devices.

Concensus among these wholesalers was that they are probably going to have to take over more and more of the distribution of specialty electrical appliances, because the wholesalers' margin is being squeezed and squeezed and squeezed.

### Specialty Distributors Need Long Margins To Operate

They know how to work on small margins, and figure that they will be called into service more and more if the specialty distributors continue to drop out.

The specialty distributors are the showmen of the business. They put on a three-ring circus, stir up a lot of excitement and interest, and "break the ice" into

a new market. But to support all their colorful efforts they need ample margins.

Old-line wholesalers, on the other hand, are credit experts. They are accounting-minded, rather than promotion-minded. And they can squeeze the utmost out of a small discount.

### O'Brien Finds Distributor Being Squeezed Between Forces

D. H. O'Brien of the Graybar Electric Co., New York City, chairman of the refrigeration committee of the N.E.W.A., put it something like this:

"There has been a tendency for several years back to reduce the distributor's spread in this business. This tendency is quite understandable in the light of the inroads made by the mail order business. Mail order houses are an especially strong factor in the refrigeration industry.

"Partly because of this condition, the large dealer—the department store and the furniture store—have been making studies to show that they have not been making money in the business. They are insisting on larger spreads.

### Distributors Must Compensate For Smaller Unit Profits

"Result is that the distributor's spread is even further impaired. Pressure is coming upon him from above and below.

"There is just one answer for the distributor in the refrigeration business: He must do better selling and promotion in order to get larger volume, because he is faced with a smaller profit per unit."

### Replacement Market Seems Attractive To Distributors

Mr. O'Brien has described the situation for the jobber-distributor, particularly with regard to the business of selling cheap refrigerators to the low-income market. The specialty distributor, however, with his flair for selling high-priced items to the "luxury trade," can go after the great—and as yet inadequately cultivated—replacement market.

In the great rush to sell lowest-priced refrigerators to low-income families, this more lucrative business has been largely neglected.

It has been overlooked that in the last few years electric refrigerators have been improved tremendously in efficiency, operating cost, appearance, and convenience—and that owners of refrigerators purchased seven, eight, or nine years ago should be downright interested in the deluxe jobs now available.

### Used Refrigerator Business Offers Profit Opportunities

Selling higher-priced refrigerators to the replacement market, of course, will involve the handling of trade-ins. However, this may turn out to be a boon, rather than a handicap.

As matters stand now, the used-refrigerator business is anything but overcrowded. Yet the demand for rebuilt and refinished electric refrigerators exceeds the supply. Fact of the matter is that most distributors and dealers have been afraid of trade-ins. They have avoided them whenever possible.

## They'll Do It Every Time . . . By Jimmie Hatlo



### Trade-Ins Must Be Properly Serviced

Yet in those cities where real effort has been expended on properly servicing trade-in refrigerators and marketing them, their profit possibilities have been spotlighted. Some also point out that in the automobile business it has become more profitable to sell used cars than new models.

### Unit Air Conditioner Most Promising of All

A most promising development in the specialty field is the unit air conditioner. Here is a package product which is ripe for real promotion effort on the part of specialty distributors. Two new developments have immensely increased the potentialities of the market for "package" air-conditioning units:

(1) The "small boom" in the construction of small houses under F.H.A. contracts, contracts which tend to approve uniformity in room sizes, as well as smaller rooms. These small rooms can be handled by "packaged" window-type unit air conditioners.

(2) Impending code restrictions on central system installations, evoked by the fear of fire hazards on the part of municipal fire inspectors. Such restrictions make the cost of central-system installations higher—and the much-lower-priced "packaged" units even more popular by comparison. And the "packaged" units do not spread fires!

### Specialty Distributors Have Ace In The Hole

It would appear that the time is really ripe for the specialty distributor to move in, and move in fast. They have the finest set-up in the world for promoting and selling unit air conditioners, and the air-conditioning manufacturers need their help as much as they need the extra volume that air-conditioning sales can provide.

If, then, the old-line jobbing houses are correct in their belief that refrigeration will be wholesaled more and more through the channels they provide, the specialty distributors need have no chagrin. New opportunities are opening up for them.

## LETTERS

### It Must Get Real Hot Down In Dallas

The Murray Co.  
General Electric Heating, Cooling,  
and Air Conditioning  
3200 Canton St.  
Dallas, Tex.

Oct. 9, 1939

Editor:

You probably don't remember the writer, but I had the pleasure of meeting you at the General Electric Air Conditioning School in 1935 in Schenectady. I was the fellow with the Leica who was photographing Joe Donovan and T. K. Quinn while you were busily engaged in doing the same thing with a camera of different make.

What prompted me to write you at this time was the paragraph in your editorial of Oct. 4 of AIR CONDITIONING & REFRIGERATION NEWS entitled "Small Unit Conditioners Provide Key to Progress."

If you will tell me the name of any \$150 window-type room cooler which will handle even a bathroom in Dallas you will probably see me fall over in amazement, and to say that two of them will take care of one of our modern homes is stretching facts completely beyond the bounds of reason.

As a matter of strict accuracy so low is the sensible cooling capacity of one of these units, speaking generally, that they can be operated in some of our Dallas living rooms, small or large, continuously, without affecting the temperature more than a degree or so.

One of the firms which started to merchandise the Johnson Room Cooler of this type has an office of approximately 15 x 18 feet with one south exposure, one window and one door. Four of these small room units are mounted in this office. They seem to be operating as well as possible without removing all traces of perspiration from the forehead of the occupants.

It is my opinion, therefore, that no two York, Philco, Johnson, or any other make window-sill units will ever take care of any house in Dallas and any editorial writer who states that they will has very little regard for the English language.

L. J. VAN SICKLE,  
Air Conditioning Department

### Digest of Laws on Instalment Contracts

Harold L. Schaefer, Inc.  
Minneapolis, Minn.

Oct. 11, 1939

Publisher:

As we operate on a contract basis all over the United States, we have found the "Digest of Title, Retaining and Personal Property Lien Instruments Used in the United States for Retail Instalment Sales" very necessary and helpful in our business.

This Digest was found in your ELECTRIC REFRIGERATION NEWS as of Dec. 25, 1935. The copy we have had all this time is badly worn and fall-

ing apart, and if possible, we would greatly appreciate it if you could furnish us with three additional copies, of the same set-up.

It is possible that by now, you may have a revised Digest, and if so, we would appreciate receiving three copies of that.

At any rate, whatever courtesy you can extend us on this request will be greatly appreciated by us.

HAROLD L. SCHAEFER, INC.

*Answer:* The above-mentioned digest has not been revised or reprinted in the NEWS. How many other readers are interested in obtaining this information?

### Training Service Men To Handle All Makes

May Electric Appliance  
Aurora, Ill.

Oct. 12, 1939

Sirs:

We wish to get good textbooks on the repair and servicing of household refrigerators.

We have always sold Westinghouse hermetics and jobbed out our trade-in repairs, etc. Now trade-ins are numerous and very troublesome, so we want to train our Westinghouse service man so that he can repair and service all makes of refrigerators.

Please advise what you will charge us for Household Refrigeration Service Volumes Nos. 1, 2, 3, and 4. Or if you have something that would better suit our needs—let us know.

Have been a subscriber to REFRIGERATION NEWS for several years and will appreciate your good advice.

V. ARTHUR MAY

*Answer:* The Master Service Manuals, Household and Commercial, are made to order for your need.

### The Operation of a Wholesale Service Shop

Lee-Sparling Co.  
5420 Hamilton  
Detroit, Mich.

Oct. 10, 1939

Editor:

The write up in your Oct. 4 issue was indeed gratifying. Mr. Price did a fine job in his analysis of our shop and its operations.

The policy of your newspaper in giving all possible information and suggestions is one reason why we enjoy being a subscriber and reader. It has been useful to us in many ways.

EDWARD C. LEE,  
General Manager

1303½ North C. St.  
Richmond, Ind.

Oct. 4, 1939

Sirs:

I didn't receive my Sept. 20 copy of the NEWS. Will you please check up on this as I save all my copies and don't want any short.

C. C. CARROLL

203 Baldridge Bldg.  
Omaha, Neb.

Sept. 29, 1939

Sirs:

Enclosed find check for \$2 to cover the cost of Manual No. A-1 and Manual No. B-1.

I am enjoying your publications very much and have found the suggestions to be of value.

W. J. NOLAN, M. D.

# Customer Relations—An Important Part of the Service Man's Training

## Public Utility Service Man Tells How To Acquire the Proper 'Manner' With Customers

TAKE A TIP FROM THE DOCTOR—

HE LISTENS TO HIS PATIENTS TALK, AND CHARGES FOR LISTENING

Eufaula, Ala.  
Oct. 18, 1939

Dear Sirs:

After all that has been said and written about correspondence schools teaching refrigeration, it seems that most all are satisfied with what was taught, the methods used, and even the cost of the course. The only "fly in the ointment" so to speak, is the inability to become connected with the industry after getting their diploma as service men. I wonder if I could make a few remarks in this letter that might be of help? Perhaps I should first attempt to myself.

To begin with, I am not a correspondence school graduate and maybe I couldn't find a job either if I were faced with the necessity of so doing. However, I have been servicing refrigerators and appliances for a large utility for many years, taking my first instructions from George Roach of Servel back in the days when Servel was shipping out wooden cabinets with the machine and cooling unit to be assembled there-in out in the field, or in the customer's old icebox.

I have received training from many other manufacturers' representatives as time passed on which has been of untold value to me. Outstanding among these in my memory, I might mention Frank Corliss and Harold Hulett of General Electric and McLaughlin of Kelvinator. All of these and personal experience have taught me a few things that I wonder if correspondence schools even touch on.

Let me illustrate what I think



### Copelands Outsell because they Outperform!

For more than 21 years, Copeland Dependable Electric refrigeration has been marketed throughout the world. Every unit is the product of capable, aggressive engineering. Regardless of what your customers' requirements are, there is a Copeland unit to meet every need.

COPELAND REFRIGERATION CORPORATION • SIDNEY, OHIO

**IT'S MIDWEST BUILT. It's BETTER BUILT**

**COMMERCIAL REFRIGERATORS**

Two display case lines—"All-Porcelain" with deluxe features and "Leader" in Dulux—priced to give outstanding value plus a complete line of "Reach-in" refrigerators (13 to 68 cu. ft. capacity) should make MIDWEST your first choice! Some Good Territories Still Available Write or wire for Complete Information

MIDWEST  
MFG. COMPANY • GALESBURG, ILL.  
EXPORT SALES DIVISION: 330 S. WELLS ST., CHICAGO, ILLINOIS, U.S.A.

"manner" is. The boss sends out a service man to fix a customer's refrigerator. The customer is in an aggravated state of mind and wants to tell the service man how the refrigerator has been acting and sometimes what he thinks is wrong, and maybe how to fix it. The service man without "manner" halfway listens or doesn't listen at all, starts in and clears the trouble satisfactorily, says that it will be so much, gathers up his tools and leaves thinking that he has impressed the customer with his knowledge of refrigeration and his speed and efficiency in correcting the trouble.

On the other hand, the service man with "manner" listens patiently with an appreciative and sympathetic attitude, then goes to work and clears the trouble and afterward, if asked, tries to explain in simple terms to the customer what his trouble was.

On this particular job, the first service man charged for one hour and wasn't called again. The second service man charged for 1½ hours for the same job and could be fairly sure of friendship and future business for his employer. He had learned his "cue" from the highly successful physician who will listen to you tell why you think you have scarlet fever (and charge you for listening) when he could see the instant you walked in his office that had measles.

It all settles back to your recommendation that a service man sell himself and not dwell so much on his diploma.

It may be of further interest to you to know that I have read REFRIGERATION NEWS diligently for the past three years and I especially enjoy the articles on new equipment and also those on new or better ways of doing things and the editorial page (even if I am supposed to be a Democrat).

Furthermore, the recent letter that you published from L. G. Legler was the means of my first contact in nearly 20 years with the man who was my Electrician 2nd Class on a destroyer in the U. S. Navy. Unless time and surroundings have made some radical changes in his ability and personality, he should make a good service man for someone.

H. J. WILKINSON

### Replacement Hardware

John F. Jelke Co.  
759 S. Washtenaw Ave.  
Chicago, Ill.

Sirs:

We have two refrigerator cabinets made by the Bohn Co. of St. Paul, Minn., who we understand went out of business in 1932.

These cabinets need new hinges and door latches and our problem has been trying to find out where this hardware can be had or if they made their own hardware, also please advise who has taken over their assets.

C. F. BACH,  
Purchasing Dept.

Answer: The Kason Hardware Corp., 127 Wallabout St., Brooklyn, N. Y. can supply your requirements for replacement hardware. They will probably refer you to the name of their jobber in Chicago.

### Built Refrigerators For Farm Homes

Hillsboro, Ore. Oct. 9, 1939

Sirs:

What is the price on the Master Service Manuals Nos. 1, 2, and 3, on household refrigeration?

Am contemplating building in refrigerators in farm homes, one compartment for below freezing and one

for cooling so I'm interested in learning what kind of unit would be best for the purpose.

Would the 1936 Refrigerator & Air Conditioning Specifications cover the subject better?

G. A. ROBSON

Answer: The Master Service Manuals sell for \$1 a volume. However, for the type of equipment which you contemplate building the series of Commercial Refrigeration Manuals would be most valuable, although you would find much help in the Household Manual No. 2 also.

If you build a large refrigerator such as you describe for your farm home, you will be building essentially a commercial refrigeration unit, and you will thus need to have information about commercial refrigerating machines.

### Received Good Training At Small Cost

1214 E. Fairchild St.  
Danville, Ill.

Oct. 16, 1939

Dear Editor:

In February of this year I graduated from the Refrigeration and Air Conditioning Institute in Chicago, Ill., and in April I already began working in the field.

After graduating I immediately began canvassing all dealers and service companies in the vicinity of my hometown. Each dealer I met, I mentioned the training that I had, but want to gain more experience.

Each one encouraged me more and more.

I felt that my training was something to be proud of. It is more than I ever expected to receive for the small sum of money I paid out to receive the training. I am sure every graduate who has a little ambition can find some sort of opening in the field to get started on.

Sincerely yours,  
EUGENE A. BERTHOLD

### Columbia Spirits, Ice-X

6826 Lelandway  
Hollywood, Calif.

Sept. 14, 1939

Sirs:

Enclosed find \$2 for which please send me books as follows: Manual No. 1, and Manual No. A-1.

On page 313 of Manual No. 3 it states to pour an ounce of Columbia Spirits into a charging tube, is that a trade name for some chemical?

W. W. THOREN

Answer: Mr. Newcum answers this as follows: "Columbia spirits is a dehydrated alcohol, and Columbia is one of the larger producers of alcohol. To be entirely modern and up to date and to make sure that the non-freeze solution is suitable for use in refrigeration systems, I would suggest that the service man use a product such as Ice-X made by Ansul Chemical Co., Marinette, Wis., or Thawzone A made by Highside Chemicals Co., 195 Verona Ave., Newark, N. J. The purpose of the non-freezing solution is obviously to prevent ice accumulation at the float valve needle and seat."

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# Air Conditioning

## Air Conditioning Swamps Bowling Alley With Capacity Crowd of Kegler Teams

BUFFALO, N. Y.—Business volume of the Strand Bowling Alleys was increased more than 50% in one month as a result of the foresight of the owner and manager, Wallace Charlton, in installing a year-around air-conditioning system.

The system, installed early in August, was the first of its kind to be installed in such an establishment in Buffalo. Since the unit has been added to the establishment, a total of 244 kegler teams have signed up to use the alleys.

Installed by Joseph Meyer & Son, Inc., of this city, the unit consists of a 20-hp. compressor capable of supplying 9,000 cu. ft. of air per minute.

"The first week of the installation," Mr. Charlton said, "teams started to sign up for the alleys' use. The advantage of bowling under air-cooled conditions was such that more than 100 teams which had been using other alleys came to us for space."

"Within the first two weeks, we reached the alleys' limit of 244 full teams. Installing that equipment was the best business venture I've ever made."

The Strand alleys consist of 20 bowling alleys. During the last two weeks, Mr. Charlton has had to turn down applications from more than two-score of bowling clubs, due to the fact that the alleys are now occupied every minute.

The air-conditioning system not only drew the regular league keglers, but also a large number of business men, who petitioned Mr. Charlton to leave special hours for individual players and parties.

"I knew air conditioning would prove popular," Mr. Charlton said, "but I had no idea we would immediately be swamped with business. Before I installed the system I often heard men and women complain of hot and stuffy alley parlors."

"In fact, that is one of the main reasons why bowling is not popular during the summer months. Now it is evident that, with air-conditioned parlors, bowling will become a popular summer sport in short order."

Mr. Charlton decided to install air conditioning after business men in the vicinity of his establishment had repeatedly decried the fact that weather wouldn't permit them to enjoy a few minutes of play in mid-day.

## Winter Conditioning Unit Built By Iron Fireman

CLEVELAND—Entrance of Iron Fireman into the winter air-conditioning field was made here recently with the announcement of the "Ace" winter conditioning unit. Designed for either automatic coal firing or oil firing, the new equipment heats, filters, humidifies, and circulates the air.

Basic design feature is the "tear-drop" shape of flue-gas passages, said to be similar to the curve of an airplane wing. The new unit is built in three sizes, with the following maximum B.t.u. output at the bonnet: No. 44, 120,000 B.t.u.; No. 55, 150,000 B.t.u.; and No. 77, 200,000 B.t.u.

Where a stoker is used, the stoker is isolated from the air chambers by means of an air-tight housing. Clinker removed from the stoker is deposited in an ash can within another tight housing.

## Parmelee Will Work On Anemostat Sales

NEW YORK CITY—C. E. Parmelee has been appointed to the sales staff of A. F. Hinrichsen, Inc., distributor for Anemostat Corp. of America in the metropolitan area and upper New York state.

He will head the industrial division of the company.

A graduate of the University of Illinois, Mr. Parmelee spent several years with Carrier and Airtemp, and was more recently associated with Ford, Bacon & Davis, engineers.

## Westinghouse Extends Compressor Line To 100-Horsepower Sealed Units

EAST SPRINGFIELD, Mass.—Announcement of a new 100-ton hermetically sealed compressor for commercial air-conditioning use has been made by Westinghouse Electric & Mfg. Co. The new machine is a V-type, 16-cylinder unit, built to a tolerance of 0.0005 in. The shaft is drilled to have pressure lubrication to all bearings.

Installation of the new compressor is said to be simplified by a refrigerant-cooled motor, which requires no external ventilation. Compact in size and relatively light in weight, the new unit may be installed in a space measuring approximately 3 feet by 7 feet. The compressor alone is 36 inches high, and mounted on a water-cooled condenser is 72 inches high.

The totally enclosed, direct-drive motor operates a reversible oil pump, which is claimed to provide positive lubrication regardless of the direction of rotation. Servicing is accomplished by removing the side plates from the crankcase, thus exposing the entire operating mechanism. No pipes need to be disconnected or the unit disturbed in any way, it is said.

### START 'ACROSS-THE-LINE'

Available for use on 2 or 3 phase 60 cycle circuits, the new compressor will operate on 208, 220, or 440 volts. Standard magnetic "across-the-line" starters or step-type starters may be used, depending on current available.

The new 100-ton compressor weighs 4,200 lbs., and has a nominal rating of 1,212,000 B.t.u. per hour, based on 37-sq. in. gauge suction pressure, 65° F. suction gas, 75° F. entering water, and 95° water out.

Cylinder head valves in the new unit are of the "feather" or "reed" type, with the suction and discharge valves for two cylinders built into one unit. Valves are punched from 0.015-in. Swedish spring steel, and honed to remove burrs. The valve plates are made of cold rolled steel with port openings drilled, using two jigs with overlapping holes so as to obtain a slot effect.

### 'AIR-CONDITIONED' ASSEMBLY

Before assembly in an air-conditioned room, the cylinder block castings are first planed smooth, using a hydraulically operated planer, to produce a smooth surface for the gaskets. Bearing surfaces and the

end bell for the motor are finished on a large horizontal boring machine.

The forged steel crankshaft is statically and dynamically balanced. The five main bearings and crankshaft bearings are ground to a tolerance of 0.0005 in. The shaft is drilled to have pressure lubrication to all bearings.

### PRECISION METHODS

The connecting rod is rifle drilled from the crank bearing to the wrist pin bearing. The wrist pin bearing is a bronzed bushing pressed into place.

Both the crank bearing and the wrist pin bearing are finish bored simultaneously on an automatic boring machine, to assure that the holes are parallel to each other and equal in size.

The babbitt for all main bearings is centrifugally cast into the bearing shells. The machining is done on a hydraulic feed machine.

After assembly, the compressor is run-in at speeds ranging from 400 to 1,200 r.p.m., and is then tested for leaks under 200-lbs. air pressure, after which it is evacuated and charged with "Freon." The unit is then put into an oven, heated until the refrigerant pressure is 150 lbs. per sq. in., and tested for leaks with a halide torch. It is then heated to 255° F. and dehydrated with a vacuum pump.

Finally the new compressor is tested under full load, and a record made of its operating characteristics.

### HAS MOUNTING FEET

Finished compressor is built as an assembly with the mounting feet attached rigidly to the water-cooled condenser of the unit. With this construction the unit can be installed on a simple foundation, and does not require that the foundation provide rigidity to support different parts of the machine, it is asserted. The complete unit has no external moving parts.

The new compressor will start on 926 amperes, using 220 volt current, and on 208 volt current requires only 875 amperes, locked rotor, it is claimed. The unit is designed for simple magnetic "across the line" starting with thermal overload protection.

## Study Courses Open In East—and West

BOSTON—Several courses in refrigeration and air conditioning have been announced by the university extension division of the Massachusetts department of education for this fall.

Leo F. Carton, installation and service supervisor for General Motors Sales Corp., will conduct a course in household refrigeration at the Massachusetts Institute of Technology, beginning Nov. 3. The course consists of 24 lectures, and is divided into three parts: household refrigeration, commercial refrigeration, and equipment selection. Large colored charts and lantern slides will be used to illustrate lectures.

P. A. L. Foulds, consulting engineer, will conduct a course in "practical air conditioning" for residences and commercial establishments beginning Oct. 26 at M. I. T. This evening course will be open to salesmen, draftsmen, builders, and others who want elementary information. Air-conditioning calculation and design will be taught in the second semester.

Automatic controls for cooling, air conditioning, and heating will be covered in a course of eight Wednesday evening lessons by John H. Barrett, sales engineer for Minneapolis-Honeywell Regulator Co., starting Nov. 8.

Tuition in all of these courses at M. I. T. will be nominal.

HOUSTON, Tex.—With Dale Cooper, Houston consulting engineer, as instructor, a class in air conditioning has been organized at the University of Houston. Twenty-five students have registered for the course, with class to be held each Tuesday night. Mr. Cooper is secretary of the South Texas section of American Society of Heating & Ventilating Engineers.

## August Sales Double Same Month of 1938

WASHINGTON, D. C.—Orders for air-conditioning equipment booked by 267 U. S. manufacturers amounted to \$4,212,062 during August, to bring the total for the first eight months of this year to \$27,515,668, according to reports compiled by Director William L. Austin of the Bureau of the Census, Department of Commerce.

August orders for air-conditioning equipment represented a gain over figures for July, when orders totaling \$3,801,440 were reported, but were a decline from June's total of \$4,630,598.

Large gain over orders during August of last year is shown in the report covering 125 manufacturers who have reported for both periods. This year, these companies booked orders amounting to \$2,491,637, as compared with \$1,292,985 in August, 1938.

Leading the volume list in August this year were orders for equipment primarily for winter use, complete units showing orders of \$1,042,024, and warm air furnaces \$1,638,240. Orders for year-around conditioning systems amounted to \$155,764 during the month in the human comfort classification, and \$20,497 in the industrial class.

Central-station systems had orders totaling \$189,757, while self-contained systems were divided as follows: under 1 hp., \$66,947; over 1 hp. and up to 5 hp., \$107,965; and over 5 hp., \$121,160. Orders for cooling units for use in air-conditioning systems, covering units of all sizes, totaled \$248,661 during the month.

Condenser orders amounting to \$166,364 were reported, while air filter sales other than those included in complete systems were \$12,616. Orders for humidifiers for use with air-conditioning systems totaled \$36,733. Blower-filter unit orders were reported at \$50,546.

## AIR CONDITIONING BOOKS

By F. O. Jordan

**MANUAL NO. A-1**—The principles of summer air conditioning. An explanation of typical air-conditioning systems, refrigeration cycles, performance of heat transfer surfaces, condensers, condensing units, and summer air-conditioning systems. 112 pages. Price \$1.00.

**MANUAL NO. A-2**—The principles of winter air conditioning. Chapters on typical heating systems, typical heating connections, hot water and steam heating systems, hot air heating systems, heat generators and controls, heating specialties, specifications of heating systems, trouble shooting. 104 pages. Price \$1.00.

**MANUAL NO. A-3**—Principles of design engineering. Conditions for human comfort, methods of comfort control, mechanics of comfort control, principles of design of air-conditioning equipment and condensing units. 112 pages. Price \$1.00.

**MANUAL NO. A-4**—The development of equipment development. The methods of developing air-conditioning equipment with numerous performance charts. Description of miscellaneous types of refrigeration machines including steam, jet, centrifugal compressors, and closed absorption cycle. Theory of electricity. 112 pages. Price \$1.00.

**MANUAL NO. A-5**—Principles of air-conditioning equipment selection. Performance tables and specifications. Sample performance tables. Auxiliary air-conditioning equipment including motors, drives, electrical equipment, fans, pumps, cooling towers, evaporative condensers, washers, and air dryers. Noise in air-conditioning systems. 104 pages. Price \$1.00.

**MANUAL NO. A-6**—Principles of load estimation and equipment selection for all types of installations. Many tables for use in quickly estimating load conditions and selecting proper equipment. Sample questionnaire and load estimate. 96 pages. Price \$1.00.

**MANUAL NO. A-7**—Application of load estimating and equipment selection principles for domestic and commercial installations plus important data on the design of all types of distribution systems. Sketches show proper duct, refrigeration, and heating system designs. 96 pages. Price \$1.00.

## Air Conditioning Made Easy

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But in these volumes Mr. Jordan, himself an engineer of many years' experience in this particular field, has stripped the subject of many confusing elements and boiled down the subject of air conditioning to simple terms that the average refrigeration man can understand.

While these manuals are of interest to engineers, they are written primarily for the use of the man who already knows something about mechanical refrigeration and wants to acquire a working knowledge of air conditioning.

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While the entire set is priced at only \$7.00, you may accumulate the series by buying only one book at a time if you prefer. We suggest you begin by sending us your order for Manual No. A-1 now. After you have completed this first volume, then re-order additional manuals as you need them. Leading refrigeration supply jobbers carry these books in stock.

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## What Causes 'Flood Back' on Systems Using Thermo Valves & Its Prevention

### 3. Cause Is Faulty Evaporator Design

By J. E. Dube and F. M. MacDougall, Alco Valve Co.

**Editor's Note:** This is the third in a series of articles describing the causes of "flood back" of refrigerant to the compressor, and outlining means of prevention. Two previous causes discussed were "poorly engineered control equipment" and "faulty application and inadequate use of controls."

Faulty evaporator design, our third major cause of "Flood Back," should receive special emphasis because it includes so many factors upon which control stability depends. Any evaporator which is difficult to control truly may be considered faulty because the control stability determines to a considerable extent the capacity of any heat-transfer surface.

Because hand control of modern evaporators subject to relatively rapid load changes is impossible, it follows that the most sensitive and stable automatic control produces the highest evaporator efficiency and the greatest safeguard against damage to the system. Therefore, a prime requisite of a good evaporator is that it must be controllable.

The faults of most frequent occurrence are uneven distribution of liquid refrigerant to multi-circuit coils, refrigerant traps and excessive refrigerant velocity in the evaporator circuits, traps ahead of and at the thermo valve remote bulb, and lack of superheating surface in flooded evaporators. In order that the effect of these factors may be understood, each of the most common evaporator types is considered separately with the factors peculiar to that type.

#### TOP-FEED MOST COMMON

The top-feed or dry-expansion coil is the most common form of evaporator for air-conditioning service. The tubes are horizontal and the return bends are arranged so that the path of the refrigerant is horizontal or progressively downward. The circuits usually are arranged in parallel in the air stream so that the loading per circuit is uniform.

Because of the natural gravity drain from the coil inlet to the outlet, the coil is dependent upon the liquid header for proper refrigerant distribution. Great care should be given to the design of these distributing headers because uneven distribution may have a pronounced effect on the control stability, as previously discussed.

The thermo valve is placed as near as possible to the header or incorporated with the header as in the multi-outlet thermo valve to minimize the separation of flash gas from the liquid refrigerant.

#### OTHER CAUSES

Uneven temperatures at the circuit outlets are not always a result of poor refrigerant distribution because unequal loading of the circuits will produce the same results. The uneven loading may be caused by poor ductwork near the coil or by a blower or fan placed too near the coil inlet without proper guide vanes.

Dry-expansion coils occasionally are constructed with the return bends arranged so that some of the tubes trap refrigerant. Liquid accumulates in the flooded tubes and intermittently slugs over into the next tube or even into the suction

line, with the attendant erratic thermo valve action and possible damage to the compressor.

The same effect may be observed in coils with long tubes inadequately supported. For example, a coil with a face width of 5 feet may have no intermediate supporting tube sheet, with the result that the tubes sag sufficiently to trap refrigerant at the bottom of the sag near the center of the coil.

One type of flooded evaporator is known as the bottom-feed or wet-expansion coil. It consists of a number of vertical tubes originating (with reference to refrigerant flow) in a liquid header and terminating at the top in a suction header, or it may take the form of a series of horizontal tubes and return bends arranged for the refrigerant flow progressively upward.

#### VELOCITY ALL-IMPORTANT

In such coils a positive means of refrigerant distribution (such as a distributing header with accurate sized orifices) is relatively unimportant, but the refrigerant velocity is all-important. Wet-expansion coils are especially subject to liquid slugging into the suction header, and various means usually are provided to prevent such an occurrence. These devices commonly are baffles in the suction header, accumulators, and driers, but they minimize the effect instead of correcting the trouble at the source.

The proper method is to maintain a low refrigerant velocity which keeps the liquid slugs down to a harmless value and permits a uniform flow which is necessary for good control and high evaporator efficiency. This means that, for a given tube diameter, each circuit must not be as heavily loaded as a dry-expansion circuit. Therefore, wet-expansion circuits should be relatively short, with consideration given to the higher heat transfer for the flooded tubes.

Another advantage of a low refrigerant velocity is that the liquid level in each circuit will be determined primarily by the static head and not by the velocity. This is an important point because the circuits usually are in series in the air stream and thus are unequally loaded. Obviously, the first circuit in the air stream is the most heavily loaded and the refrigerant velocity in that circuit is the greatest.

#### IF VELOCITY IS HIGH . . .

If the velocity is high, the attendant pressure drop will limit the refrigerant flow and each successive circuit will have a lower pressure drop. More important from a control standpoint is that there will be a high superheat at the outlet of the first circuit, and each successive circuit will have a lower outlet temperature. The latter circuits probably will spill liquid refrigerant into the suction header.

Only hope for satisfactory thermo valve control under such conditions is to provide sufficient space between the suction header and the thermo valve remote bulb to permit a thorough mixing of the refrigerant gas and liquid slugs. However, such an arrangement is unstable at best, and liquid slugs may be carried beyond the remote bulb.

#### WHEN COIL IS SPLIT

Now consider what happens when the velocities are reduced by splitting the coil into a greater number of circuits or by using tubes of a larger diameter. The pressure drop through the tubes becomes negligible, and the simple liquid header permits the liquid refrigerant to rise approximately to the same level in each circuit because the quantity of refrigerant delivered to each circuit depends upon the static head in the liquid header and not upon the pressure drop between the liquid and suction headers.

There should be no difficulty in getting enough refrigerant through the first circuit (the most heavily loaded) to satisfy the load, with the result that the superheat at the outlet will be normal. The liquid levels and superheats at the outlets of the other circuits will be approximately

the same because refrigerant is admitted at the same rate at which evaporation occurs, and not in proportions determined by a liquid distributor. Conditions will stabilize and the likelihood of refrigerant slugs will vanish. Although the loading per circuit is uneven, the superheats at the circuit outlets are uniform and are determined only by the setting of the thermo valve.

#### COMBINED SUCCESSFULLY

The dry-expansion (top-feed) and wet-expansion (bottom feed) methods may be combined successfully in the same coil circuit, even with the relatively high velocities common to the former type. This is accomplished simply by flooding any or all of the tubes except the latter ones in the circuit and using these latter tubes for smoothing out any disturbances originating in the flooded section.

For example, the refrigerant may enter at the bottom of a circuit, flow progressively upward, and then flow progressively downward to the suction header. Another example is the refrigerant entering at the top and flowing downward as in a straight top-feed coil, then flowing upward for a few tubes and return bends, and then flowing downward again.

An important precaution to be observed is that the average point of complete evaporation (at which a dry and saturated gas theoretically exists) must be beyond the flooded section. In other words, the liquid refrigerant must begin its downward (dry-expansion) course before reaching the point at which superheating begins. Failure to provide sufficient space in the dry-expansion section for superheating and for stabilizing the liquid flow may result in occasional slugging into the suction line.

This arrangement provides the relatively high heat-transfer factor of a flooded coil in the wet-expansion section of the circuit and the greater velocity (longer circuit length) of the dry-expansion coil.

#### OIL RETURN IMPORTANT

It is proper to mention at this point that the oil return always is an important consideration in any evaporator design. For that reason the high velocity is a distinct advantage in carrying the oil through the flooded section. However, the circuits should be arranged in parallel in the air stream so that equal loading will avoid any abnormally high refrigerant velocities.

A positive means of liquid distribution must be used because of the high velocity in the tubes.

The foregoing discussion is intended to show the importance of refrigerant velocity. It should be clear that the circuit length is important only insofar as it affects the refrigerant velocity. To clarify

further this point, consider two extremes: a forced-draft finned coil for comfort cooling and a bare pipe coil with natural-draft air circulation in a cold-storage room.

The forced-draft coil has a high rate of heat transfer, a large amount of surface per unit length, and a high temperature split, resulting in a relatively high load per unit tube length.

The load per unit length of the cold storage coil is much lower because of the very low air velocity and the small temperature split. A circuit length of 100 feet in the former type of coil would be inconceivable although cold storage coils hundreds of feet in length are common.

#### COIL LENGTH MYTH

Each is controlled with equal ease, the correct explanation being that the total load per circuit (and therefore the refrigerant velocity) is no greater on the storage room coil than on the comfort cooling finned coil. These two extremes of loading per unit coil length are mentioned to dispel the widespread belief that the coil length is all-important for thermo valve control.

As an illustration, assume a finned coil with each circuit consisting of 15 feet of  $\frac{1}{2}$  inch o.d. tube and an average fin surface of 3 square feet per linear foot of tube, a temperature difference of  $30^{\circ}\text{ F.}$ , and a heat

transfer factor of 7 B.t.u./hr./sq. ft. of temperature difference. Also assume a bare coil of  $1\frac{1}{4}$  inch pipe, 1,500 feet long with an external surface of .435 square foot per linear foot of pipe, a temperature difference of  $10^{\circ}\text{ F.}$ , and a heat transfer factor of 2.3. The calculated loads are 0.65 ton for the finned coil and 1.25 tons for the bare pipe coil.

Assuming that the refrigerant is "Freon-12" in each case, the outlet velocities are 1,270 feet per minute for the finned coil and only 440 feet per minute for the bare pipe coil. The bare pipe coil is 100 times as long as the finned tube circuit, but the velocity is only one-third as great.

(To Be Continued)

## Nema Plans Discussion On Effects of War

CHICAGO — The effect of the European War upon electrical exporting problems will be the major topic of discussion at a meeting Oct. 27 of the Export Committee of National Electrical Manufacturers Association during the annual Nema meeting in the Palmer House here.

At a meeting of the Policies Division on Oct. 26, the proposed program for 1940, entailing 67 projects, will be considered. New board of governors will be elected.

## THE BUYER'S GUIDE

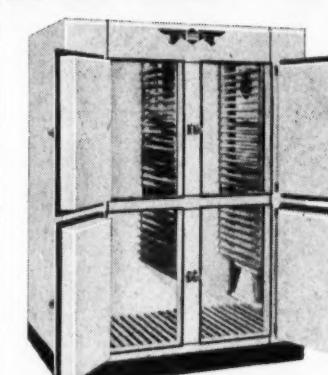
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THE AMERICAN BRASS CO.  
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General Offices, New Haven, Conn.

## No Sudden Price Raise, Dry-Zero Promises

CHICAGO—In a letter sent to customers late in September, Dry-Zero Corp. informed them it had no intention of increasing the price of its products within the next 30 days, and indicated its intention of giving 30-day notice of any necessary increases in prices.

"We know that the war in Europe is resulting in rapid increases in the prices of most raw materials, including steel, paper, asphalt, and other domestic raw materials required for our products," the company told customers. "We know that we shall probably be forced to raise our prices. But we do not believe that the abrupt action taken by our own suppliers should be passed on to our customers."

"We believe such action is as often the result of panic as it is of necessity.... We will not participate in such a chain letter program to spread uncertainty through the whole business structure."

"We hope that you will seriously consider adopting the same attitude toward your customers, and suggest that your suppliers offer you equal safeguards...." The letter is signed by Harvey B. Lindsay, president.

## New Machine With Mechanical Cooling Unit

### Used To Treat Cancer In Buffalo Hospital

(Concluded from Page 1, Column 3)  
it at the desired temperature.

The Therm-O-Rite unit itself consists of a two-cylinder  $\frac{1}{2}$ -hp. Tecumseh compressor; a circulating pump, with a  $\frac{1}{8}$ -hp. Westinghouse motor connected to rotary pump, and an electrical heating unit, submerged in water using a 1,000-watt heater. The unit pumps 1 gallon of water per minute.

Dr. Augustus W. Hengerer, chairman of the American Society for the Control of Cancer, who has charge of the patient at the Deaconess Hospital, said that the "freezing" is apparently working well with the patient.

"She says she has had no pain for the past 24 hours," Dr. Hengerer said after one of his regular checks on the patient's condition, "and also said she was comfortable and feeling better."

A special nurse in attendance reported that the patient has been conscious much of the time during the last three days she has been in the frozen sleep. She dozes off from time to time.

Food is not entirely withheld; the patient had a cup of coffee Tuesday

night and another the following morning.

Half-hour recordings of temperature and blood pressure are made and the patient carefully watched. The temperature of the patient is dropped from the normal 98.6° to between 85 and 90°. As a result, breathing slackens, the heart slows down, and no actual food is required. A mild anaesthetic usually is employed to prevent pain from freezing.

The patient's body temperature, according to Dr. Hengerer, has been dropped as low as 80°. The physician is in almost constant attendance on her and the patient is also the subject of intense interest and study of other prominent physicians and surgeons from all parts of the country.

In the meantime a second patient

of Dr. Hengerer's is now undergoing tests for submission to the frozen sleep treatment. This patient is said to be a comparatively young woman.

Doctors who have examined the apparatus, which has been dubbed the "Cancer Igloo" at the Deaconess Hospital, have praised Mr. Barnes' machine. They point out that because of the high temperature range the machine also can be used on persons requiring fever shocks, such as victims of paresis and malaria.

The two other machines now in existence are in Philadelphia at the Temple University Hospital. They are being used by Dr. Temple Fay, who with Dr. Lawrence Smith of that medical laboratory, developed the ice treatment for cancer.

Dr. Fay, originator of the first ice-pack sleep, declared that the new method has many advantages in use, and that the treatment not only relieves pain, "but retards growth of the cancer tissue and in some cases has caused a certain amount of degeneration of such tissues."

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**JACKSON MICHIGAN**  
**HEAT INTERCHANGERS**



Advanced engineering,  
skilled workmen and  
precision production  
methods result in high  
quality refrigerating  
units.

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**GET PEAK PERFORMANCE with SPORLAN Controlled Performance VALVES**

**Tests Prove it's Completely Waterproof.**  
**The New SI Small Capacity MAGNET VALVE**  
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Low prices, money back guarantee.  
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**CONTROL REPAIR** service. Your controls repaired by expert mechanics, with special precision equipment. Supervised by graduate engineers. We stress perfection and dependability before price. One year guarantee on domestic controls. Any bellows operated device repaired. **HALELECTRIC LABORATORY**, 1793 Lakeview Road, Cleveland, Ohio.

**GENERAL ELECTRIC DRI** and DR2 Monitor Top units exchanged, \$30.00 F.O.B. our factory. Send your defective unit. On receipt, we make immediate shipment of completely rebuilt, refurbished unit with one year unconditional guarantee. Like new in every respect. Westinghouse and Servel hermetic units rebuilt and guaranteed. **REFRIGERATION MAINTENANCE CORPORATION**, 321-27 East Grand Avenue, Chicago, Illinois.

**DOMESTIC TYPE** thermostatic controls reconditioned like new. Precision work by experts. Years of satisfied customers, among largest in the country. All work guaranteed. Try us and be convinced. The largest thermostatic repair service in the country. It's your guarantee. Prices on request. **UNITED REPAIR CO., INC.**, 342 W. 70th St., New York City.

### PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. **H. R. VAN DEVENTER (ASRE)**, Patent Attorney, 342 Madison Avenue, New York City.

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FOR ALL TYPES OF  
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**A Dehydrator that is really  
Dry. Mueller Brass Co.  
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**MUELLER BRASS CO.**  
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**Finned Tube Products**  
SINCE 1907  
**Bush Mfg. Co.** for COOLING,  
HEATING and  
AIR CONDITIONING  
Hartford, Conn.

**STOP LEAKS AND  
NOISE**  
on old shafts as well  
as new with  
**SYNTRON**  
"ANTI FRICTION"  
**SHAFT SEALS**  
Order from your jobber  
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A complete line in all sizes  
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Vegetable Display Cases.  
**Quillen Bros.  
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**ADD TO YOUR PRODUCT  
THE REPUTATION OF  
PENN Controls**  
Write for Catalog  
**PENN ELECTRIC SWITCH CO.**  
GOSHEN, INDIANA

**A COMPLETE LINE OF:  
COMMERCIAL REFRIGERATORS  
AND DISPLAY EQUIPMENT**  
• STAINLESS STEEL •  
• GLOEKLER MANUFACTURING CO.  
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WRITE FOR OUR NEW CATALOG

**BUNDY TUBING**  
Copper-Brazed Steel. Copper Coated Inside and Out. Sizes:  $\frac{1}{8}$ " to  $\frac{1}{2}$ " O.D.  
**BUNDY TUBING CO., DETROIT**

**QuiKold BEVERAGE COOLERS**  
10 MODELS WRITE FOR CATALOG  
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NEW YORK?**

• Plan to make the convenient Belmont Plaza your headquarters, for here you're right in the heart of things. Just a few blocks from Grand Central Station, Radio City, Fifth Avenue.

800 well appointed rooms, each with radio and both tub and shower—from \$3.00. Two popular priced restaurants: the Pine Room with its speedy service and coffee shop prices, and the famous

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New and enlarged line of doors, rails, jamb and other parts for easy, quick assembly. Economical—practical. No increase in price.

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**WALL HUMI-TEMP UNITS**  
You Will Increase Your Profits  
One Customer Sells Another  
Units For Every Need

Today—See Your Jobber or Write Direct to  
**LARKIN COILS, INC.**  
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**YOUR "on-the-counter" Belt Department!**  
Gilmer's "Eye-ful" Tower and MERCHANDISER and HANDIMETER  
earns almost \$1.00 an inch PROFIT for it occupies! Costs only  
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Let Chieftain Lead You to New Profits in 1940

**TECUMSEH PRODUCTS CO., TECUMSEH, MICH.**  
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**THE ACE—  
of Tube Cutters**

• Of all the Imperial tools that are so widely used, it is safe to say that the No. 174-F Tube Cutter is the "king of the crop" or the "Ace in the hole." You can buy cutters for less money, but you can't buy anything the equal of it.

THE IMPERIAL BRASS MFG. CO., 565 S. Racine Ave., Chicago, Ill.

**IMPERIAL**

ORDER FROM YOUR JOBBER

VALVES • FITTINGS • TOOLS  
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No. 174-F  
for 3/16" to  
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Tubing \$2.75  
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**COMMERCIAL LINE** refrigerator display cases, walk-in coolers, and refrigerators; also direct draw mechanically cooled beer coolers. Sell with Ehrlich Compressors or with any other make. Attractive discounts also financing arrangements to help sell. 70 years in business. Write for full information. **EHRLICH REFRIGERATOR MFG. CO.**, St. Joseph, Mo.

**COMPLETE COMMERCIAL** Refrigerator line. Porcelain corkboard display cases, reach-in, walk-in and sliding door, full vision fruit and vegetable refrigerators. Originators of open top refrigerated vegetable cases. Full line extra-liberally coiled. Percival-Universal units. Established 1886. 53 years of service. **C. L. PERCIVAL COMPANY**, Des Moines, Iowa.

SEND FOR PRICES and literature on the General 1940, all streamlined refrigerator display case. Over 40 years' experience manufacturing good commercial display cases. On a comparative price test with other makes of equal specifications, prices are lowest in the country. **GENERAL REFRIGERATOR & STORE FIXTURE CO.**, 519 Bainbridge St., Philadelphia, Pa.

**EQUIPMENT FOR SALE**

REPLACEMENT CONTROLS and relays for all standard model Frigidaires. Controls \$4.00 each—Relays \$2.50 each. Also three-tray flooded Frigidaire coils \$2.50 each. "As is" Grunow refrigerators in all sizes. Write for further information. **ASSOCIATED REFRIGERATOR PLANT, INC.**, 3028 Hunting Park Ave., Philadelphia, Pa.

BRAND NEW complete high sides:  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$  h.p. General Electric compressors with General Electric motors; Frigidaire compressors with Delco motors.

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**Anaconda Copper Refrigeration Tubes**

New 16-page book shows best reaming method Ask for a copy

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THE AMERICAN BRASS CO.  
FRENCH SMALL TUBE BRANCH  
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gilt-edge ADJUSTABLE  
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Manufacturers Since 1870  
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Copper  
REFRIGERATION  
TUBING  
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YOUR JOBBER CAN  
SUPPLY YOU

**WOLVERINE TUBE CO.**  
1413 CENTRAL AVENUE DETROIT, MICH.

**KERO TEST**  
Valves and Fittings  
The Standard of the  
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BARE AND  
COMPLETE

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**MERCHANT & EVANS CO.**  
Phila., Pa., U.S.A. Plant at Lancaster, Pa.

**Dayton**  
V-BELTS

Silent, vibrationless, dependable, long-lasting. Powerful grip prevents slippage. A nearby distributor carries a complete stock for appliances and machines.

**THE DAYTON RUBBER MFG. CO., DAYTON, OHIO**  
World's Largest Manufacturer of V-Belts

**BRUNNER**

Send for the New  
**REFRIGERATION CATALOG**

Seven Models of Compressors  
Fifty-eight Models of High-sides from  $\frac{1}{4}$  H.P. to 15 H.P.

**BRUNNER MANUFACTURING CO.**  
UTICA, N.Y.

## Distributor-Dealer Doings

### Lawyer Explains Court Ruling on Use of Misleading Advertising, 'Price Blinds'

Mr. Kramer, a practicing lawyer with offices at 16 Court St., Brooklyn, has made a special study of laws and legal problems involving merchants, and in the following article he describes a legal action against a refrigerator dealer that grew out of the way a price sign was written and displayed in a store window.

By Louis Kramer, Member of the New York Bar

There is a law in New York that was placed on the books to keep advertising and merchandising men from misrepresenting their goods. A similar law can be found in many of our 48 states.

In the abstract, the statute says: "Thou shalt not advertise your wares by stating a fact which is untrue, deceptive, or misleading."

Of course, you might ask when is a fact untrue, or when is a fact not a fact? With this question you must bear in mind the statute as you read of a case that arose not so long ago under this interdiction. The outcome of the proceeding is interesting because it has clarified the law's operation.

An inspector of weights and measures, walking along a street, observed a refrigerator in the rear of a store window display. On top of the box the inspector noticed a sign; at this point he stood about 6 feet away when he first attempted to read the card.

Mr. Inspector read: "1938 Norge \$119.50 10 years warranty 3 years to pay Save at Le Winter's."

Said the inspector to himself: "A box of that size should cost more than that; there must be something wrong with it. I'm going to find out." With this determination he walked into the store and sought out the manager.

"How much is the Norge refrigerator in the window?" he asked.

"\$189.00," replied the manager.

"But you say only \$119.50." The manager then pointed out the word "from" on the sign so that the price read "from \$119.50."

"I didn't see the word 'from' when I read the sign. I think it's misleading. By the way, do you have a Norge refrigerator at \$119.50 in the store?"

"We have a refrigerator for \$119.50—it's smaller but of the same type," the dealer answered. "It carries the same warranties. These refrigerators usually sell for more

than \$119.50. If you want one I can get it for you."

It so happens that the inspector was near-sighted, wore glasses, and, you recall, he stood 6 feet away when he first read the sign. He testified that he had perfect vision when wearing his glasses.

The box itself was about 6 feet tall. It stood on a platform 1 foot high. The sign was placed on top of the refrigerator in the rear of the window. The manager claimed he could read the word "from" from the same spot where the inspector originally read it.

The case was heard in the Court of Special Sessions in New York City. Counsel for the defense likened the sign to the "f.o.b. Detroit" in smaller letters on price cards used for automobiles. Nevertheless the court found the dealer guilty and fined him \$250.

Counsel, not to be daunted, appealed to the Appellate Division. He argued that the inspector could get a refrigerator for the same terms as shown on the card; therefore, the sign was truthful in all of its particulars.

Even though the word "from" was not as obvious as the other lettering, the word was there on the sign. If a conviction was to be had because the size of the letters was too small in the opinion of one person, great confusion would result because of the difference of opinion on this subject.

Had the sign been placed in the window alone there would be no basis for prosecution. Counsel debated that the law pertained to the matter contained in the advertisement and not to extrinsic circumstances.

Victory was the defendant's (dealer). The appeal court decreed a reversal of the conviction; the justices felt that although the sign lured the customer into the store, it did not deceive him into believing he could get the large refrigerator for the price shown on the card.

**'Sales Boosting' Dealer Makes Trick Delivery**

**Greusel Brings Appliance 'Spark' To Boys Club**

**MILWAUKEE**—Frank W. Greusel, head of Greusel Distributing Corp. and president of the Wisconsin Radio, Refrigeration & Appliance Association, has been elected vice president of the Milwaukee Boys' Club.

### G-E Dealer Moves

**ARLINGTON**, Va.—Warner Electric Co. has moved into a new location at 3173 Wilson Blvd. here. The store is a General Electric dealership.

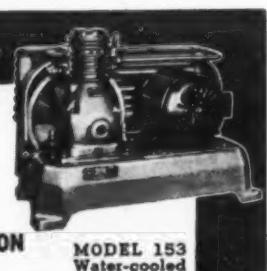
### Who Said 'Unlucky 13'?

**ATLANTA**—Thirteen appliances in three days was the sales-shooting record hung up by Frank Hayley of Georgia Power Co.'s west end retail store on Aug. 28, 29, and 30. His sales covered five ranges, four refrigerators, and four water heaters—for a cash total of \$1,583.

Add Our Experience to Yours . . .



**Lipman**  
AUTOMATIC REFRIGERATION  
GR  
AIR CONDITIONING  
GENERAL REFRIGERATION CORPORATION  
Dept. AC-3 Beloit, Wis., U.S.A.



### 230 Refrigerators For Florida Housing Deal

**JACKSONVILLE**, Fla.—Installation of 230 Westinghouse refrigerators for the Brentwood Park low-rent housing projects has recently been completed, reports Ray O. Edwards, executive director of the Jacksonville Housing Authority.

Eighty of the 230 refrigerators are 6-cu. ft. models, and the remainder are 4-cu. ft. models. E. J. Eckert, Westinghouse official at Jacksonville, handled the negotiation.

### Mayfield Heads NRDGA Group on Price Control

**ST. LOUIS**—Frank M. Mayfield, president of Scruggs, Vandervoort & Barney, St. Louis department store, has accepted the chairmanship of the country-wide emergency committee of 36 department and specialty store merchants authorized by the board of directors of the National Retail Dry Goods Association to cooperate with other groups in resisting "undue and unwarranted" increase in prices.

### Bruce & Taylor Named To James & Co. Posts

**ST. LOUIS**—Albert E. Bruce has been appointed general sales manager of James & Co., General Electric distributor here, succeeding R. L. Hughes, who was elected president of the company following the recent death of L. D. James, founder of the firm.

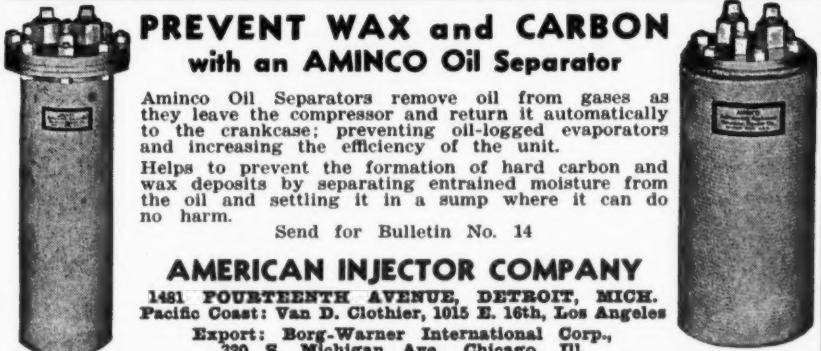
Mr. Bruce has been with James & Co. for eight years, most of the time as manager of the service and repair departments. Succeeding him in that position will be Earl Taylor, who formerly was associated with General Electric Supply Corp. in New Orleans.

### Distributor Broadcasts 'Bama Football Games

**BIRMINGHAM**, Ala.—Wimberly & Thomas Hardware Co., distributor of Stromberg-Carlson radios here, will sponsor broadcasts of University of Alabama football games this season. Station WSGN, Birmingham, will feed the games to three other state stations.

## THE BUYER'S GUIDE

### PREVENT WAX and CARBON with an AMINCO Oil Separator



Aminco Oil Separators remove oil from gases as they leave the compressor and return it automatically to the crankcase; preventing oil-logged evaporators and increasing the efficiency of the unit. Helps to prevent the formation of hard carbon and wax deposits by separating entrained moisture from the oil and settling it in a sump where it can do no harm.

Send for Bulletin No. 14

**AMERICAN INJECTOR COMPANY**

1481 FOURTEENTH AVENUE, DETROIT, MICH.

Pacific Coast: Van D. Clothier, 1015 E. 16th, Los Angeles

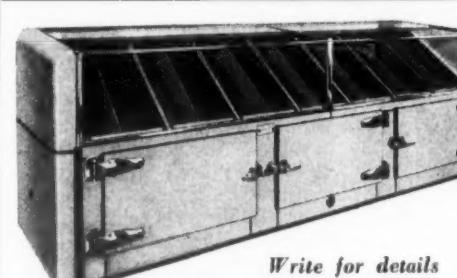
Export: Borg-Warner International Corp., 320 S. Michigan Ave., Chicago, Ill.

## 8 COMPLETELY STOCKED WAREHOUSES REFRIGERATION AND AIR CONDITIONING

Write For Our Catalog on Your Letterhead  
BRANCHES: NEW YORK, DETROIT,  
CLEVELAND, ST. LOUIS and  
3 IN CHICAGO

## PARTS.

THE HARRY ALTER CO., 1728 SO. MICHIGAN AVE., CHICAGO, ILL.



Every Food Merchant A Prospect!

For This New Self-Serve Produce Case

It's OPEN! The customer can reach right in—no doors to slide—and embodies a new principle of refrigeration (Pat. appl'd for).

**SANDERS BUTCHER SUPPLY CO.**

2755 W. Fort St., Detroit, Mich.

## HENRY

### ABSO-DRY Pressure Sealed DEHYDRA- STRAINER



Write for catalog

**HENRY VALVE CO.**

1001 N. Paulding Ave., Chicago, Illinois

Stocked by leading jobbers

## MILLS

### COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois

# Major Appliances

## G-E Distributors & Dealers Bag Orders Worth \$1,300,000 on 'Mike Sweeney' Day

NEW YORK CITY—They "told it to Sweeney" with more than a million and a quarter dollars worth of household refrigerator sales.

"They" were General Electric distributors and dealers all over the country, and "telling it to Sweeney" was their contribution to a special "Mike Sweeney Day" planned as a surprise for the manager of the G-E domestic refrigerator sales section by A. L. Sanger, refrigeration sales manager, and Jean DeJen, manager of dealer service. Results of the drive, held Sept. 29, have just been tabulated.

Quota set for the day by G-E headquarters was \$500,000 in sales at list prices. But when the final tabulation was made, sales stood at \$1,300,000, with several sections still unheard from. And it was all "for the luvva Mike," without benefit of bonuses, high pressure, or mirrors.

So, after 29 years with General Electric, Salesman Mike Sweeney was forced to sit idly by and watch the refrigerator sales roll in and drop at his feet. The special sales effort in his honor was kept a complete secret from him until the day arrived. As a matter of fact, even the G-E dealers were not informed until the day before the drive opened.

Mr. Sanger and George Chapman recorded a special message to campaign managers, announcing the plans. The disks did not arrive at their destination until Sept. 22, and then were played by sales counsellors at a campaign meeting.

Bob Shackelford, manager of G-E Supply Corp. in Nashville, Tenn., received only one record, which he had to carry to all points in his territory by plane.

Then the fireworks began, at 7 a.m. in most distributorships, with a breakfast for dealers. And it wasn't a favorable day for sales, either. There were dust storms in Texas, rain and fog elsewhere. In some territories, the supply of refrigerators was exhausted. But sales and telegrams and friends dropped into campaign headquarters in the Waldorf-Astoria hotel here in a continuous stream throughout the day and evening—and a new sales record was born.

Mike Sweeney Day was the greatest single day for household refrigerator sales in the company's history, perhaps the best single day for all appliances, although a check-up on this latter mark could not be made readily. It passed the total set several years ago for "Zimmerman Day," in honor of P. B. Zimmerman, then sales manager, although that drive covered all appliances and was staged during a stock market boom and with bonuses to salesmen.

A notable sidelight of the campaign was that several distributors reported sales of other appliances

zooming in the same proportion to refrigerators. For example, A. Wayne Merriam in Schenectady, N. Y. reported a refrigerator total for the day of \$16,086, but this was only about half of his total appliance sales. Other campaign bits:

Pat Callan, a builder in Great Neck, Long Island, was asked by a Rex Cole salesman to buy at least one refrigerator in honor of Mike Sweeney. Said Callan: "Did you say 'Sweeney'? I'll take 10."

One of the waiters at the Waldorf-Astoria was heard to say to another, as the telegrams rolled in: "This guy Sweeney is sure getting a lot of votes!"

In the territory of J. M. Walker, G-E district manager in the southeast, girls at cigar counters wore Sweeney Day buttons, and told their customers all about the event.

It was a great day for the Irish.

## Merchandise Mart Sales Show an Upswing Trend

(Concluded from Page 1, Column 5)

This year's September business bettered August sales of \$10,999,115.80 by 29.6%, the survey indicated. On the basis of the first 10 days' activity, a continuation of the upswing was predicted for October, but on a modified scale, as manufacturers and wholesalers gradually become adjusted to war conditions.

In the major and electrical appliance field, strong gift department buying in appliances of the kitchen and buffet class had important bearing on the month's improvement. Stoves and other "cold-weather" appliances, however, dropped behind because of unseasonable warm weather extending into September, the survey reported. An improvement in October over the previous month is predicted by wholesalers polled.

Furniture sales, considered an accurate gauge of consumer buying, held close to the general average in September, gaining 41.2% over September of last year and 38.7% over August of this year, according to the report. Little price change was shown, but a 5% rise was considered likely by the first of next year, if material costs increase.

Housewares sales in September increased 25.4% over September, 1938, with an aggregate dollar-volume of \$2,560,943, against \$1,863,875. The August, 1939, figure of \$1,971,060 was passed by 19.6%, the survey stated. Improved farm buying plus the threat of rising prices, supported by activity of steel issues on the stock market, were credited with adding impetus to the upward swing.

No actual general price rise has taken effect in this field, it was reported, and such a move is thought unlikely for at least two months.

## Department Stores Hit Extended Terms

(Concluded from Page 1, Column 5) aged two repossession out of every 100 units sold on terms of 20% down and 24 months credit. The number of repossession doubled when the down payment was cut to 10% and the terms extended to 30 months.

"In fact, when this company extended terms to 36 months, the repossession rate jumped so phenomenally that it was five to seven times greater than when terms of 20% down and 24 months were in force. Certainly no more effective argument than this can be cited against the undue lengthening of instalment terms."

Claim of the sales finance companies which have extended terms to 36 months that they acted in response to a widespread consumer demand for more liberal terms, was countered with the assertion that credit executives in department stores report that over 80% of their customers buying major appliances use 12 to 18 months terms, although more liberal terms are available.

"Most department store credit executives, and from all we have been able to learn, the bulk of the leading sales finance companies, disfavor the practice of advertising 36 months terms," the division said. "This does not mean, however, that longer terms should not be granted in individual cases where the credit risk would justify them. At the present time the general feeling prevails that 36 months is much too

long a period to extend credit of this type as a matter of regular policy.

"Experience has shown that the consumers to whom such a plan will appeal will most likely be the type who, from the standpoint of credit risk, are less stable over a period of two or three years, and whose chances for continued employment is by no means assured. These conditions would tend to increase losses from bad debts and repossession, with an increase in the latter creating considerable ill-will on the part of customers.

"Credit executives feel that the start already made toward extending length of payments by these two organizations is apt to lead to the adoption of unduly liberal terms for all other lines of merchandise sold on the instalment plan. This in turn would foster a tendency to load up customers with many long term obligations, taking them out of the market for long periods with conceivably harmful effects on general business conditions."

## Rural Appliances To Be Shown At Wis. Utilities Meeting

MILWAUKEE—First showing of rural appliances in connection with a meeting of the electric section of the Wisconsin Utilities Association will be held at the organization's annual convention here Nov. 6 and 7.

Speakers at the convention will include C. W. Kellogg, president of Edison Electric Institute; G. A. Reitz, rural manager of General Electric Co., who will discuss farm refrigeration; and B. P. Hess, rural manager for Westinghouse.

## Chapman & Snyder Named G-E Appliance Assistants

(Concluded from Page 1, Column 4) D. C. Spooner, who formerly managed household appliance activities, has been assigned to Mr. Snyder's staff.

Mr. Chapman started with G-E's lamp department in 1913, and remained there in several capacities until 1931, when he was appointed assistant manager of specialty appliance activities at Cleveland. In 1935 he became manager of the division, maintaining the position until the recent consolidation.

Mr. Snyder's activities during the past several years have ranged from the practice of architecture and the promotion and sale of the electric dishwasher to the coordination of all home appliances in "packages" designed to appeal to builder, merchandiser, and consumer.

He organized General Electric's Home Bureau, which administers all the company's activities in the building field, suggested the first appliance design committee, and pioneered the complete electric kitchen program which has since been adopted rather widely throughout the industry. Mr. Snyder and Mr. Chapman are graduates of Syracuse University.

## Racine Dealer Changes Name

RACINE, Wis.—Paramount Radio Stores has changed its name to Capitol Radio & Appliance Co. Sam Shapiro is president and Harriet Pilkus secretary of the company.

- The Weber Showcase & Fixture Company, like many other famous manufacturers of commercial cabinets, has found A-P Valve Dependability the best assurance of service efficiency on all types of refrigeration.

Service Engineers tell us that the most profitable Valve for any job is an A-P. It requires less service attention, and can be depended upon for accurate, leakproof, super-sensitive refrigerant control under all conditions—trouble-free service that means satisfied customers.

SERVICE COSTS kept TO A MINIMUM WITH A-P VALVES

**WEBER**  
SHOWCASE & FIXTURE CO., INC.  
5700 AVALON BOULEVARD  
LOS ANGELES CALIFORNIA  
August 28, 1939

Automatic Products Company  
912 East 3rd Street  
Los Angeles, California

Gentlemen:

For over two years we have purchased your automatic expansion valves for use on our commercial refrigerator equipment. We want to take this opportunity of telling you the service and performance that your products have given.

We have found it necessary to install these valves for many different kinds of refrigerator requirements and in nearly all cases satisfactory service has been kept up. Service costs have been kept to a minimum insofar as valve trouble was concerned. We thought you would be interested to know how your products were performing when installed in our equipment. We wish to take this opportunity of thanking you for the service you have rendered us in connection with these valves.

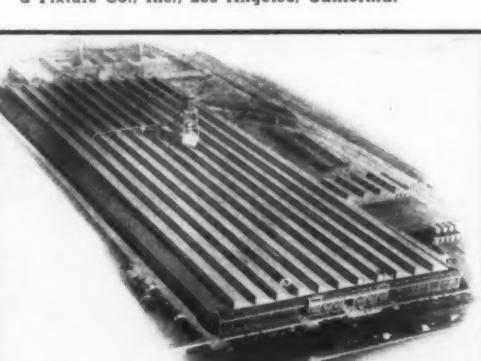
Yours very truly,  
WEBER SHOWCASE & FIXTURE CO., INC.

*[Signature]*  
Don Mack - Sales Promotion Manager

★ AUTOMATIC PRODUCTS COMPANY  
2450 NORTH THIRTY - SECOND STREET  
MILWAUKEE WISCONSIN

• Large, modern factory of Weber Showcase & Fixture Co., Inc., Los Angeles, California.

• A-P Model 205 Thermostatic Expansion Valve.



• Refrigeration Parts Jobbers, Who Recognize Quality, Stock A-P Valves

**DEPENDABLE**

THE BYWORD FOR A-P VALVES

**NEW!** Manual No. SF-1

## Soda Fountain Refrigeration

This is the first of a set of two new manuals that every service man will want. Installation and service instructions on mechanically refrigerated soda fountains.

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BUSINESS NEWS PUBLISHING CO.

5229 Cass Ave.

DETROIT, MICH.